A

COMPENDIOUS SYSTEM

OF

MIDWIFERY,

CHIEFLY DESIGNED TO FACILITATE THE

INQUIRIES

OF THOSE WHO MAY BE PURSUING THIS BRANCH OF STUDY.

ILLUSTRATED BY OCCASIONAL CASES,

AND WITH MANY ENGRAVINGS.

SEVENTH EDITION, WITH ADDITIONS AND IMPROVEMENTS.

BY

WILLIAM P. DEWEES, M. D.

PROFESSOR OF MIDWIFERY IN THE UNIVERSITY OF PENNSYLVANIA; MEMBER OF THE AMERICAN PHILOSOPHICAL SOCIETY; MEMBER OF THE PHILADELPHIA MEDICAL SOCIETY; OF THE ROYAL MEDICAL SOCIETY OF DENMARK, &c. &c.

LIBRARY
SURGEON GENERAL'S OFFICE
DEC. 7--1901
176978

PHILADELPHIA:
CAREY, LEA & BLANCHARD.

1835.

W
D
1835



Eastern District of Pennsylvania, to wit:—

BE IT REMEMBERED, that, on the thirteenth day of January, in the fiftieth year of the Independence of the United States of America, A. D. 1826, WILLIAM P. DEWEES, M. D., of the said district, hath deposited in this office the title of a book, the right whereof he claims as Author, in the words following, to wit:—

"A Compendious System of Midwifery, chiefly designed to facilitate the Inquiries of those who may be pursuing this branch of study. Illustrated by occasional Cases. With thirteen Engravings. Seventh Edition, with Additions, &c. By Wm. P. Dewees, M. D., Professor of Midwifery in the University of Pennsylvania, Member of the American Philosophical Society, &c. &c."

In conformity to the Act of the Congress of the United States, entitled, "An Act for the Encouragement of Learning, by securing the Copies of Maps, Charts, and Books, to the Authors and Proprietors of such Copies, during the times therein mentioned"—And also to the Act, entitled, "An Act supplementary to an Act, entitled, 'An Act for the Encouragement of Learning, by securing the Copies of Maps, Charts, and Books, to the Authors and Proprietors of such Copies, during the times therein mentioned,' and extending the benefits thereof to the arts of designing, engraving, and etching Historical and other Prints."

D. CALDWELL,
Clerk of the Eastern District of Pennsylvania.

GRIGGS & CO., PRINTERS.

TO

PHILIP S. PHYSICK, M. D.,

PROFESSOR OF ANATOMY IN THE UNIVERSITY OF PENNSYLVANIA, ETC.

MY EARLY AND FAITHFUL FRIEND,

THE SPLENDOUR OF WHOSE PROFESSIONAL REPUTATION

IS ONLY EXCEEDED BY

THE PURITY OF HIS PRIVATE CHARACTER,

THIS WORK,

THE RESULT OF MY INQUIRIES, OBSERVATIONS, AND REFLECTIONS, ON AN IMPORTANT SUBJECT,

IS AFFECTIONATELY INSCRIBED, BY

WM. P. DEWEES.

CONTENTS.

PAGE

Introduction - - - - - - - - 11

CHAPTER I.

Sect. I. Of the Pelvis - - - - - - - 17
II. Of the Sacrum - - - - - - - 18
III. Of the Coccyx - - - - - - - 19
IV. Of the Ossa Innominata - - - - - 20
V. Of the Separation of the Bones of the Pelvis - - 21
VI. Of the Deformity of the Pelvis - - - - 28
VII. Examination of the Pelvis - - - - - 37

CHAPTER II.

Of the Child's Head - - - - - - 40

CHAPTER III.

Of the Genital Organs - - - - - - 44
Sect. I. Of the Internal Organs - - - - - 48
II. Of the Uterus and its Dependencies - - - 49

CHAPTER IV.

Of the Efficient and Final Cause of the Menses - - - 60
Sect. I. Of Lunar Influence - - - - - 64
II. The General Plethora Doctrine - - - 64
III. Topical Congestion - - - - - - 66
IV. Final Cause - - - - - - 69

CHAPTER V.

Of Conception - - - - - - - 71
Sect. I. Graviditas in Uteri Substantia, or Graviditas Interstitialis 73

CHAPTER VI.

Of the Changes produced by Conception - - - - 74
Sect. I. The Membranes - - - - - 79
II. The Placenta - - - - - - - 82
III. Fœtal Circulation - - - - - 85
IV. Of the Changes which take place in the Uterus from Impregnation - - - - - - - 87

CHAPTER VII.

Of the Development of the Fœtus - - - - 91

CHAPTER VIII.

Of the Action of the Uterus - - - - - - 104

CHAPTER IX.

PAGE
Of Displacements of the Uterus - - - - - - 109
Sect. I. Of Prolapsus from Pregnancy - - - - 109
II. Retroversion of the Uterus - - - - 110
III. Of the Obliquities of the Uterus - - - - 120

CHAPTER X.

Of the Term of Utero-Gestation - - - - - 129

CHAPTER XI.

Cause of Labour - - - - - - - - 147

CHAPTER XII.

Of Labour - - - - - - - - - 168
Sect. I. Of Rigours, &c. - - - - - - 168
II. Frequent inclinations to make water, Tenesmus, &c. - 169
III. Affections of the Uterine System in particular - - 171
a. Subsiding of the Abdominal Tumour - - 171
b. Secretion of Mucus - - - - - 172
c. Dilatation of the Os Uteri - - - - 173
a. Contraction of the Longitudinal Fibres - - - 174
b. Contraction of the Circular Fibres - - - 175
c. Of the Simple Contraction - - - - 175
d. Of the Compound Contraction - - - 176
e. Of the Tonic Contraction and its Effects - - - 176
f. Of the spasmodic or Alternate Contraction, and its Effects 177

CHAPTER XIII.

The Manner in which the Os Uteri is opened - - - 179

CHAPTER XIV.

Conduct during Labour - - - - - - - 185
Sect. I. What may be necessary for the Child - - - 190
II. Unassisted Delivery of the Placenta - - - 198
III. Of Putting to Bed - - - - - - 199
IV. Of After-pains - - - - - - - 200
V. Regimen during the Month, &c. - - - 206
VI. Of the Lochia - - - - - - - 210
Excessive Lochia - - - - - - 212
VII. Attention necessary to the Child - - - - 215
a. Of washing the Child - - - - 215
b. The dressing of the Navel - - - - 215
c. Purging off the Meconium, &c. - - - 217
d. Of the Retention of Urine - - - - 219
VIII. Of Food for the Child - - - - - - 221

CHAPTER XV.

Of Natural, or Unassisted Labour - - - - - 224

CHAPTER XVI.

Of the Presentations of the Head, and their Causes - - 227
Sect. I. First Presentation, and its Mechanism - - - 229
II. Character and Mechanism of the Second Position - 231
III. ——————— Third Position - - 231
IV. ——————— Fourth Position - 232
V. ——————— Fifth Position - - 237
VI. ——————— Sixth Position - 237

PART II.

PAGE

Of Labours, in which the child presents the Vertex, but rendered difficult, or preternatural - - - - - - 239

CHAPTER XVII.

Causes of Preternatural Labours - - - - - - 239
Sect. I. Of Flooding - - - - - - - 240
II. Of Convulsions - - - - - - - 242
III. Of Syncopes - - - - - - - 242
IV. Of Hernia - - - - - - - 245
V. Of Obliquity of the Uterus - - - - - 246
VI. Of Partial Contractions of the Uterus - - - - 247
VII. Of Compound Pregnancy - - - - - 251
VIII. Of Prolapsus of the Umbilical Cord, &c. - - 252
IX. Of Too Short a Cord - - - - - 252
X. Of the Bad Position of the Head, though the Vertex may present - - - - - - 253
a. Of the Bad Position of the Vertex - - - 253
b. Of the Chin departing too early from the Breast - 254
c. Cases in which the Face presents - - - 259
d. Presentations of the Head and Hand - - 263
XI. Of Exhaustion - - - - - - 264
XII. Of Hemorrhage from other parts than the Uterus - 269

CHAPTER XVIII.

Rules for Conducting a Preternatural Labour - - - 270
Sect. I. Position of the Woman for Turning - - - 271

CHAPTER XIX.

The Mode of Operating in Each Presentation of the Head - - 276
Sect. I. First Presentation - - - - - 277
II. Second do. - - - - - - 278
III. Third do. - - - - - - 278
IV. Fourth and Fifth do. - - - - - 279
V. Sixth do. - - - - - - 279

PART III.

Where it is necessary to use Instruments which do no injury to Mother or Child - - - - - - - 281

CHAPTER XX.

Of the Forceps - - - - - - - 281
Sect. I. General rules for the use of the Forceps - - - 283
a. Of those which regard the Woman - - 283
b. Of the Condition of the Uterus and Soft Parts - 284
c. Application, and mode of Action of the Forceps - 285
a. Of Compression - - - - - 297
b. Compression and Traction - - - 299
d. Mode of Acting after Application - - - 299
II. Recapitulation - - - - - - 300
III. General Observations upon the Forceps - - - 302

CHAPTER XXI.

Of the specific Application of the Forceps - - - 304
Sect. I. *a.* Application in the First of these Positions - - 305
II. *b.* —————— Second - - - - 306
III. *c.* —————— Third - - - - 307
IV. *d.* —————— Fourth - - - - 308

PAGE
Sect. V. *e.* ———— Fifth - - - - 309
VI. *f.* ———— Sixth - - - - 309
VII. *g.* ———— Seventh - - - - 309

CHAPTER XXII.

General remarks on the Use of the Forceps, when the Head is above the Superior Strait - - - - - - 310

CHAPTER XXIII.

Of the Locked or Impacted Head - - - - - 312
Sect. I. Of the Causes, Signs, and Accidents of the Locked Head 313
II. Indications in the locked Head - - - - 313
III. Method of using the Forceps in the Locked Head - 315

CHAPTER XXIV.

Of the use of the Forceps in Face Presentations - - - 316

CHAPTER XXV.

Of Presentations of the Breech - - - - - 319
Sect. I. Species of Breech Presentations - - - - 320
II. *a.* Mechanism of First Breech Presentations - - 321
III. *b.* ———— Second do. - - - 322
IV. *c.* ———— Third do. - - - 322
V. *d.* ———— Fourth do. - - - 323

CHAPTER XXVI.

Causes which may render Presentations of the Breech Preternatural 324
a. First degrees of advancement - - - 326
b. Second do. - - - - - 327
c. Third do. - - - - - - 327
Sect. I. Position of the Child - - - - - 330
II. Size of the Breech - - - - - 330
III. Mode of bringing down the Feet in the first Breech Presentations - - - - - - - 331
IV. Mode in Second Position of the Breech - - 332
V. ———— Third do. - - - - - 332
VI. ———— Fourth do. - - - - 333

CHAPTER XXVII.

On the use of the Forceps, when the body is delivered, and the head retained - - - - - - - 334
Sect. I. Cases proper for the Forceps - - - - 341
a. Mode of operating in First Case - - - 341
———— Second do. - - - 342

CHAPTER XXVIII.

Of the Presentations of the Feet - - - - - 343
Sect. I. Species of Feet Presentations - - - - 344
II. Preternatural Labours when Feet present - - - 345
III. Mode of Acting in the First and Second Presentations - 346
IV. ———— Third and Fourth do. - - 348

CHAPTER XXIX.

Presentations of the Knees - - - - - 350
Sect. I. Causes which render Presentations of the Knees preternatural - - - - - - - 351
II. Mode of Operating in Presentations of the Knees - 352

CHAPTER XXX.

Of Tedious Labour - - - - - - - 353
Sect. I. Of the Want of Contractile Force - - - 355
Cases - - - - - - - 355
II. Of Rigidity, &c. of the Soft Parts, as the cause of Tedious and preternatural Labour - - - - 358

PAGE
Of the Species of Rigidity of the Os Uteri . . 364
Rigidity of the first Kind 364
Var. 1, ... 364
2, ... 365
3, ... 366
III. Cicatrices, or other Imperfections arising from Local Injuries, ... 368
Cases 369
Relative Rigidity 374
IV. Tonic Rigidity; or Rigidity from the Premature Escape of the Waters 376
Sect. V. and VI. Over-distention of the Uterus, and the membranes too dense, as a cause of Tedious Labour . 377

CHAPTER XXXI.

Hemorrhage from the situation of the Placenta over the mouth of the Uterus 381
Sect. I. Where the Uterus is but little opened, and is very rigid 394
II. When but little opened, but disposed to dilate . . 397
III. Opened to some extent, but very unyielding . . 398
IV. Where opened to the same extent, but soft . . 399
V. Where fully dilated 400
A case of fatal Hemorrhage at the Seventh Month of Utero-gestation, from the Placenta being placed over the mouth of the Uterus, together with remarks upon it, and several other modes of treating Uterine Hemorrhage 411
VI. Causes of Uterine Inertia 421
VII. Hemorrhage, before the Placenta is expelled . . 422
a. I. Where there is a partial separation, but the Uterus enjoying some tonic power . . . 423
b. II. Where there is a partial separation, but the Uterus possessing very little or no tonic power . . 424
c. III. Where there is a partial separation of the placenta, while the remaining portion is too adherent, and the Uterus contracts but feebly . . 428
d. IV. Where every thing is as at III. except that the Uterus enjoys its full power . . . 431
e. V. Where there is an entire or partial separation, but the Uterus in a state of exhaustion or syncope 432
f. VI. Where there is either a partial or complete separation of the placenta, and where the body and fundus are in a state of Inertia, while the neck enjoys its tonic powers 435
VIII. Flooding after the expulsion of the Placenta . . 437
IX. On the means for preventing Flooding . . . 439

CHAPTER XXXII.

Of the Assisted delivery of the Placenta 443
Sect. I. Mode of Acting in Retention from want of Tonic Power . 445
II. Retention from too firm adherence . . . 445
a. Mode of acting in this Case 446
III. Of the Delivery of the Encysted Placenta . . 448
a. Mode of operating in this Case 449
IV. On the enclosed and partially protruded Placenta . 451
Mode of acting in each Case 452
V. Of the delivery of the Placenta, when the cord is broken, or is very feeble 453
a. The signs by which the Placenta may be detected . 455
b. Mode of acting in this case 455

CHAPTER XXXIII.

PAGE
Of Puerperal Convulsions 456
Cases 461

CHAPTER XXXIV.

On the Inversion of the Uterus 469
Cases 491

CHAPTER XXXV.

Of Twins, &c. 496
a. On the Management of the Placenta . . 507

CHAPTER XXXVI.

Of Preternatural labours 510

CHAPTER XXXVII.

Of the Presentation of the Arm and Shoulder 511
Sect. I. Of the Condition of the Uterus 516
II. Of the Situation of the Arm and Shoulder within the Pelvis 519
a. The Manner of Acting, if the Child be living . 520
b. Of Spontaneous Evolution 521
c. Mode of Acting, if the Child be dead . . . 523

CHAPTER XXXVIII.

On Presentations, with the falling down of the Umbilical Cord . 528

CHAPTER XXXIX.

Of the Rupture of the Uterus 539
Gastrotomy 550

PART IV.

On Deliveries performed by Cutting Instruments, applied either to the Child or Mother 553

CHAPTER XL.

Deformity of the Pelvis 553
Sect. I. Of Turning in a Deformed Pelvis, as a means of saving the Child's Life 554
II. Of the Forceps in a Deformed Pelvis 556
III. Of Cephalotomy 560
Observations, &c., on Elizabeth Sherwood's Case, as related by Dr. Osborn 572
IV. Of the Cæsarean Operation 579
a. Mode of Performing it 591
b. Treatment after the Operation 596
V. On Premature Delivery 599
VI. Section of the Pubes 610
VII. Regimen 618

CHAPTER XLI.

Monstrosity and Accidental Deformity 622

CHAPTER XLII.

Uncertainty of the Child's Death 623

CHAPTER XLIII.

On the Secale Cornutum, or Ergot 624

INTRODUCTION.

It has often been declared, that labour, being a natural act, it did not require the interference of art for either its promotion, or its accomplishment; and, consequently, that when this becomes necessary, it only forms an exception to the rule. This view of the subject has had many followers; and has, from its influence, retarded, more perhaps than any other circumstance, the progress of improvement in this most important branch of medical science. It so entirely comported with the theories of the fastidious admirers of nature; it so completely coincided with the feelings of those, whose supineness made them averse from inquiry; so effectually apologized for ignorance, and so plausibly extenuated the evils arising from neglect, or the want of the proper and judicious application of skill, as to secure in its favour by far the greatest portion of the practitioners of Midwifery.

Errors in premises must almost necessarily lead to errors in deduction; hence, the too exclusive reliance on the powers of nature to overcome all the obstacles connected with parturition —hence the almost total disregard of the first, and most important principles in the art of midwifery! These errors doubtlessly originated in ignorance; and were perhaps at first excusable from this cause: but how reprehensible do they become now, since the powers of nature are better calculated, and the resources of art better understood! In what light, then, should we view writers, who still inculcate such doctrines—teachers who make the whole art of midwifery consist, in doing nothing!

Were the constitutional powers of the system, the physical conformation of the pelvis, and the size of the child's head, always and undeviatingly the same; were the most favourable

presentation of the child, the best construction, and the most healthy play of the powers concerned in this operation, never to be assailed by accident, or complicated by disease—the opinions of those who contend for the supremacy of unassisted nature, would deserve much, and perhaps exclusive attention. But it is too well known, that this never has, nor ever can, be the case; for the powers of nature must necessarily have their limits, and consequently the interference of art becomes sometimes absolutely necessary.

I am very far from wishing to be understood, as advocating the indiscriminate interference of art during the progress of a healthy labour—it is the very reverse of my opinion, and of my practice; I wish merely to insist, that nature is not competent to all exigencies. For in very many instances, when permitted to proceed without interruption, and is eventually able to effect her object, the sufferings of the patient, most probably, might have been very much abridged by the judicious interposition of skill. Of this, from long experience, I am entirely convinced.

If this be true in the most healthy or practicable labour, how much more important does the judicious and timely application of adventitious aid become, when it is well known, that the deviations from healthy power and structure, are almost constant in their occurrence, and almost infinite in their variety. It is the knowledge of these aberrations, and the mode of obviating them when necessary, that emphatically declare midwifery to be a science—for it has, and must have, its principles; principles, that must not only be known in the abstract, but constantly employed; and it is the happy application of these fundamental rules, that makes one practitioner, superior to another.

I trust my last assertion will not be considered gratuitous; for if there be a difference in the skill of practitioners, which most certainly there is, it can only arise from a more perfect acquaintance with the rules which should govern; the extent of experience; and the justness of deduction. But does not this declare there is something more to be learnt, than the bare exercise of patience? What practitioner has ever been eminently successful, who has neglected the first principles of the art? He may be extensively employed, and tolerably lucky, (for it is nothing more,) without a correct notion of either the structure of the pelvis, the mechanism of labour, or the powers of the uterus; but will he be qualified to act where the first is faul-

ty; the second obstructed; on the third impaired? will he not, in most instances where either of these conditions obtain, wait in vain for the all-sufficient exertions of nature?

Experience, however necessary and important, is not alone sufficient: a correct foundation must be laid, by the study of first principles; and with even these, the progress must be slow; since variety in labour is so multiplied. It is only by a happy and well-balanced generalization, that the practitioner can arrive at principles; and it is but by judiciously acting upon these, that he can be extensively useful. I may safely appeal to the candour of almost any practitioner, whether he has not admitted to himself, that had he been better acquainted with principles at a previous period of practice, he could have procured, in certain cases of labour, either a speedier termination of it, or a more fortunate issue—I am sure he will answer in the affirmative.

Too much importance can easily be attached to experience alone; for though I consider it a *sine qua non* to the successful exercise of the profession, yet it becomes only decidedly useful in difficult cases, when it is based upon the fundamental principles of obstetrics. Without an acquaintance with these, every practitioner must act empirically; and this to the too frequent destruction of human life. If he be ignorant of all that is essential to be known of the well-formed and diseased pelvis; or unacquainted with the various ways the head may pass through it, he will be totally incompetent to act, when there is any material deviation from the healthy economy of labour. On the one hand, he may rashly suppose, there is no alternative but in the use of the crotchet, where a little address might have immediately relieved the patient by rectifying the error in presentation; and on the other, he may negligently and reprehensibly, wait for the successful operation of nature, until the patient expire.

In making an estimate of the value of experience alone, I must admit that many pursue the safer plan in submitting the case to nature; for I confess that, in many cases of desperate appearances, she successfully overcomes the dangers that menace her; but this is only submitting to a choice of evils: while the well-instructed practitioner would triumph over them by his skill, and spare nature this hazardous conflict. That in many instances we should be only the silent observers of nature, is unhesitatingly acknowledged; but I must insist, and I am per-

suaded I shall be supported by every well-instructed accoucheur, that it requires no less judgment to determine when we should be so, than when it is proper to offer assistance, or to take the business entirely out of her hands.

But the decisions of ignorance do not always result in an entire reliance upon the powers of nature; they sometimes, and this but too frequently, end in the contrary extreme—in these cases, there is, on the part of the practitioner, an overweening desire to aid her efforts; and his ill-directed endeavours, but too soon eventuate in a destructive subversion of her powers. To this we must attribute the very many instances of injury that take place in the hands of the ill-instructed. Who has not witnessed a labour, which, had it been let alone, would have been but an ordinary one, as regards either duration or severity, converted into one of great hazard, and protracted duration? Can such mischievous ignorance be too severely reprehended, or could it be too severely punished? What has he not to answer for, who shall permit a fellow creature to die, when a little address or knowledge might have saved her; or, what is perhaps still worse, who shall absolutely destroy her, by ill-judged and rude manœuvres, under the specious pretence of relieving her, when the case should have been trusted to the powers of nature alone.

Besides, the peculiar situation of our country, imposes a necessity upon every medical student, to become well acquainted with the theory of midwifery; for every one almost must practise it, if he pursue the object for which he is educated. A change of manners within a few years, has resulted in the almost exclusive employment of the male practitioner. This was mainly effected by a conviction, that the well-instructed physician is better calculated to avert danger, and surmount difficulties, than the ignorant pretender: but how ill is this confidence repaid! a confidence which costs the female so severe a struggle! Should they submit their welfare, nay their lives, to the ill-instructed practitioner, what security have they that they shall escape, without having entailed on them a permanent derangement of organ, or the perpetuation of a harassing, and loathsome disease?

In whatever point of view we regard this subject, it must be highly interesting to the philosopher, and the philanthropist; shall it be less so, then, to the physician who should be both, and who is more immediately concerned in its influence? Shall

it be a matter of indifference to him, who has almost the control of the future comfort and happiness of, perhaps, an extensive population, and who shall become, as it were, the arbiter of the lives of thousands? A man of very loose morality shudders at the idea of a *single* murder; yet an ignorant practitioner of midwifery, may feel no "compunctious visitations of conscience" for a hundred, committed professionally, from ignorance.

I hope to be credited when I declare, that the present work was not undertaken, without due deliberation upon the responsibility attached to such an enterprise: and that my aim most honestly was to be useful—I have endeavoured to make my experience available to the interests of humanity; and, should I even fail to instruct, I feel a confidence, I shall not dangerously mislead.

I have ventured to depart from common usage, in treating of the various objects belonging to my subject; but it is the method I have pursued for more than thirty years in teaching; and to me it appears the most natural. That is, to bring under one view all that may belong to any particular labour, or class of labours—whether natural, and to be trusted to the powers concerned in the operation; or complicated, and requiring a departure from this rule; or when essentially bad. I make all the modes of treating it under the various circumstances which may effect it, follow each other without interruption.

Generally speaking, I have followed Baudelocque's distribution of subjects, but not rigorously; and to him I hold myself indebted for nearly all I know: or, at least, his masterly manner of treating every thing connected with this branch of medicine, has enabled me to comprehend at once, the seeming intricacies of obstetrics, and to profit by bed-side experience. I, therefore, cannot too earnestly recommend the study of his works to such practitioners, as well as the student of midwifery, who may not have profited already by his genius, and his long and well-tried experience.

I occasionally, in the course of the present work, differ from this great man; but when I do, it is doubtingly; and only when a careful examination of my own experience has produced a conviction that it is correct so to do; accompanied, however, at the same time, by a regret, that I am forced to the alternative.

I have added Plates, to represent the different positions of the head, that no embarrassment might follow from mere descrip-

tion. These, I hope, will prove as acceptable, as I am persuaded they will be useful.

I have materially altered the arrangement of the present edition, by removing from it all the Chapters which related to the diseases of women and children. My motive for this will be obvious, when it is recollected, I have written separate treatises on both these subjects, since the first publication of this system.

I have also added several very important Chapters on subjects strictly obstetrical; together with several new plates, illustrative of the topics to which they have reference. In a word, I have attempted to make this present edition, deserving of the high patronage this work continues to receive.

A

COMPENDIOUS SYSTEM

OF

MIDWIFERY.

CHAPTER I.

Section I.—*Of the Pelvis.*

1. The complete knowledge of the pelvis, as well in its healthy as in its diseased state, is essentially necessary to the successful practice of midwifery. Had more attention been paid to acquiring an acquaintance with its natural, and its deranged dimensions, by those who profess to practise this important branch of medicine, we should have had fewer instances of gross errors in practice, and, of course, fewer victims. Without understanding the pelvis well, it is impossible that any one can safely give assistance where either the operation of turning, or the application of the forceps, is required to terminate the labour; nor can the mechanisms of the various presentations be understood in their most simple forms, without a thorough knowledge of it. We hope, then, we shall be excused when we say, that no man should be trusted to practise obstetrics, who is ignorant of this important assemblage of bones.

2. The pelvis is that structure which is situated below the last lumbar vertebra, with which it is by one of its surfaces articulated; and above the superior extremities of the thigh bones, with which it is connected, by means of the acetabula. It is composed, properly, but of four bones in the adult state, viz. on its posterior and inferior part, by the sacrum and coccyx; and on the lateral inferior and anterior parts, by the ossa innominata. But in treating of this structure, it is useful and proper to consider its constituent parts, as each is composed of several

others to which appropriate divisions and names have been given; we shall, therefore, pursue this plan, as it has both propriety and utility to recommend it; and, first, of

Sect II.—*The Sacrum.*

3. This bone has been sometimes called the false vertebra, because it is a kind of continuation of the true; and because, in the fœtal state, it may be divided into five portions. The union of these five pieces can readily be detected in adult age, by four transverse seams.* Its general figure is triangular or pyramidal; the base of which is upwards, and is connected to the last lumbar vertebra, by a cartilaginous intervention. The apex of the triangle or pyramid is below, and has the coccyx united to its extremity by means of cartilage. It may be divided into four surfaces; namely, an anterior, posterior, and two lateral surfaces: its anterior surface is smooth and concave; while its posterior is very rough and convex; its anterior face is smooth, that no obstacles may be offered, or abrasions take place, by the passage of the child's head through the cavity of the pelvis; its posterior is studded with processes or eminences, to give greater security and surface to the various muscles that originate, and that are inserted into it; as, also, to afford greater firmness of connexion to the many ligaments which aid in its union with the ossa innominata. Its lateral surfaces are rough or scabrous; and are covered in the recent subject with cartilage, by means of which they are united to corresponding surfaces, offered by the ilia. This bone is pierced on each side by four holes, which transmit the sacral nerves. There is also on its posterior portion, a canal, along which the spinal marrow is continued.

4. The manner in which the sacrum is set into the ossa innominata, is well calculated to give firmness and security to its position; as it acts, in some measure, as a key-stone does to an

* Velpeau speaks doubtingly of the number of pieces and lines in which the sacrum may be divided—why, we are at a loss to understand, as our impression is, that nature is uniform in this respect. He says, "sa face (the sacrum) antereure, plus ou moins concave, offre, au milieu, *quatre ou cinq facettes quadrangulaires et autant de lignes transversales*," p. 3. Baudelocque makes but four lines, as it requires five pieces to give four lines when united. He makes but four holes for the transmission of the sacral nerves, whereas Velpeau makes five. It is true, that the upper portion of the coccyx unites with the inferior portion of the sacrum, and thus forms an additional hole. In general, however, this is merely a notch in each of these bones, forming thus an imperfect foramen, for the transmission of the fifth nerve of the sacrum; but this hole is not proper to the sacrum.

arch: this arises from two peculiarities of form: the anterior part of this bone is broader than the posterior; consequently, enters like a wedge between the ossa innominata; this enables it to sustain, without injury, any force that may operate from within, outwards: the superior portion is also broader than the inferior; and, of course, is placed precisely analogous to the key-stone of an arch, by which it is enabled to support the superincumbent weight of the body, &c., without yielding. We cannot fail to remark, how admirably this arrangement gives stability to the whole of the pelvic circle.

5. The union of the last lumbar vertebra with the base of the sacrum, is permitted to take place in such a manner as to look over, and into, the superior opening of the pelvis, so as to form a promontory; and hence it is called the projection or promontory of the sacrum.

6. The length of this bone is usually from four inches, to four and a half; its breadth is about four inches. Its thickness, if measured from the middle of its base anteriorly, to the extremity of the superior spinous tubercle on its posterior face, is very constantly two inches and a half; and we are informed by Baudelocque,* that this measurement is so constant, that he did not find it vary a line in between thirty and forty pelves, the greater part of which were deformed. The concave form of this bone gives a hollowness to a greater part of its length; the depth of this, in a well formed bone, is about three-quarters of an inch.

Sect. III.—*The Coccyx.*

7. This appendage to the sacrum is also of a pyramidical form, and is about an inch and a quarter in length; like the sacrum itself, it resembles an inverted pyramid; its base being united with this bone by intervening cartilage; it is formed of three bony portions, whose connexion with each other is readily observed by the transverse ridges which their union forms. Its connexion is such as to permit of a regressive motion; especially in the earlier parts of life. Lateral motion is prevented by the insertion into the sides of this bone, of the coccygæi muscles; of parts of the levatores ani; and portions of the sacro-sciatic ligaments.

* System, page 18, par. 35.

Sect. IV.—*The Ossa Innominata.*

8. The other portions of the pelvis are made up of the ossa innominata; they constitute the lateral, anterior, and inferior parts of this cavity. Each of these is divided into three distinct bones by all the writers upon midwifery or anatomy; and there seems to be propriety in this separation; since they were originally, or in the fœtal state, distinctly marked as independent bones, though not so clearly defined, in adult life; and in the study of the pelvis, it will contribute to a more precise notion of its form and combinations. The os innominatum is then composed of the ilium, ischium, and pubis.

9. The ilia form the highest lateral portions of the pelvis; and may, with much propriety, be considered as belonging to, and constituting a part of, the abdomen, as well as of the pelvis properly so called; the ilium is the largest of the bones now under consideration—its superior edge is nearly semicircular, and is almost always tipped with cartilage; this is called the spine of the ilium. It reaches down, and forms, with certain portions of the ischium and pubis, the acetabulum. The external surface of this bone is a little convex, and has been named dorsum; while its internal face is concave, and is called costa, or fossa of the ilium. There are four processes usually described as belonging to the ilium; namely, two anterior, and two posterior, spinous processes.

10. The broad, spreading part of this bone is divided from the lower portions, by a ridge which commences at its connexion with the sacrum; runs forward, and joins with a similar ridge, sent by the os pubis—this sharp line marks the upper, from the lower boundary of the pelvis; and is called the linea ilio pectinea.*

11. The ischium is the lowest of the three bones; and, like the ilium, forms a part of the acetabulum. From the posterior part of this bone, a sharp process runs backward, yet inclining towards the cavity of the pelvis, so as rather to diminish its capacity; to this is attached, the internal sacro-sciatic ligaments; it then runs downward, and terminates in a tuber; into the inside of which, the external sacro-sciatic ligament is affixed. From this tuber a bony process is reflected, which joins the os pubis

* This ridge, which, in some subjects, is very sharp, is formed by the superior and internal portions of the pubes and ilii.

12. The os pubis is the smallest of the three bones which constitute the os innominatum—its largest portion is employed in the formation of the acetabulum; it then diminishes in size; and stretches over, to meet a similar portion of the os pubis of the opposite side. It now becomes broader and thinner, and sends a branch downwards, to unite with the one reflected from the os ischium. The mode of union of these bones is such, as to leave a considerable space between them, and this space is called foramen ovale, or foramen magnum ischii; which, in the recent subject is covered by a dense ligamentous membrane, and gives origin to the obturator muscles. Nerves and blood vessels are transmitted through this membrane by appropriate openings.

13. The ossa innominata are joined, at their posterior and central portions, to the sacrum, by rough corresponding surfaces: these are spread over by thin cartilage, and the union secured by strong appropriate ligaments. The anterior junction of these bones is called the symphisis of the ossa pubis; but the mode of union is different from that which connects their posterior portions—agreeably to Baudelocque, nature has paid much more attention to it than to the other parts of the pelvis, by sending out, in addition to a proper quantity of cartilage, a number of short, but very strong ligaments, which give great security to the symphisis. Dr. Wm. Hunter has also given a very particular description of the mode of union of this symphisis, in the second volume of the Medical Observations and Inquiries.

14. As it is not in the power of every body to consult and study the pelvis from the natural one, it is thought important to give a figure of a healthy, well constructed one; that an idea may be formed of its general shape and connexions; and though not as satisfactory as the natural preparation, it will, nevertheless, give a pretty correct notion of it. (See Plates I. and II.)

Sect. V.—*Of the Separation of the Bones of the Pelvis.*

15. It would seem, from what occasionally occurs in practice, that the bones of the pelvis may separate, notwithstanding the especial care that nature has bestowed upon their union. This separation may take place in various degrees: from a simple relaxation of the connecting media, to an absolute separation. This accident may happen gradually; commencing almost with gestation, but not manifesting itself with much severity until after delivery; or it may occur suddenly during labour; or just when it is about to be finished. Fortunately for the female, it

is a disease of rare occurrence; at least in this country; for we have met with but two decided cases of the kind in the course of our practice.

16. Were we to yield to popular belief, we should be obliged to grant, that nature had kindly studied the comfort and safety of the female, by endowing the ligaments and cartilages which connect the different portions of the pelvis with a capacity to yield to the impulse of labour, that the operation might not only be less severe, but safer. This opinion is coeval with medical record, and it has been sustained, not only by ingenious reasoning, but by an appeal to observation. The respectable names of Pineau and Pare are used in support of it among the more remote moderns; and Gardien, in our own time, yields to a belief of its advantage. While Baudelocque, Denman, &c. see nothing in this supposed provision, but misery to the female who may be the subject of it.

17. We may adduce the following reasons as conclusive against this relaxation being a natural provision—1. It is certain, so far as can be determined by the dissection of women who had died during, or immediately after labour, that the symphises were very rarely found to have yielded in the slightest degree. Baudelocque tells us, he sought for it twenty times in well-constructed pelves after laborious labours, as well as in distorted ones, without meeting with scarcely one, which could remove all doubts of its existence.* 2. That it is not more frequent in the distorted, than in the well-formed pelvis; now, were it an advantageous provision, it consequently should have been more certainly observed in the former. 3. Were it an arrangement of nature, the means do not seem adequate to the end; as it would require that the extremities of the ossa pubis should be separated one inch from each other, to gain two lines, or two-twelfths of an inch, in the antero-posterior diameter of the superior strait; an increase but very rarely sufficient to do good in a contracted pelvis; and unnecessary in a well-formed one; as the latter is almost constantly larger than is absolutely necessary in ordinary labours. 4. That wherever it has been ascertained to have taken place, even in a slight degree, it has never failed to create either temporary, or a permanent inconvenience; and, where extensive, the most serious evils, and even death, have followed.†

* System, vol. i. par. 55.

† We are not a little surprised that Dr. Blundell should express himself in the

18. Various causes have been assigned for this relaxation or separation of the pelvic bones: 1. Serous depositions in the cellular meshes, or interstices of the connecting media. 2. Tumefaction of the cartilaginous extremities of the ossa pubis. 3. The child in transitu acting like a wedge on the bony circle which bounds the upper strait. 4. Mechanical violences, as falls, blows, instrumental delivery, &c.

19. When mere relaxation exists, the symptoms, though pretty permanent, are not so violent, as when there is a separation. A painful tottering walk, with a greater or less inability to stand, and more especially on both feet with equal firmness, mark very certainly this condition of the pelvis; and this is sometimes detected even before labour. When it happens during labour, it is always attended with a painful sensation at the relaxed part, together with an inability to exercise the auxiliary powers concerned in this operation. This latter circumstance is worthy of notice; as it would seem to decide at once, that this yielding is not intended to benefit parturient women. When the injury is greater, and a real separation has taken place, it has been found, that it is by the destruction of the ligamentous tissue which connects the bones, and thus permits them to retire further from each other than mere relaxation would have done. When it is the symphisis of the pubes which suffers this accident, an entire separation of the cartilaginous epiphysis from the extremity of the os pubis takes place; for, agreeably to Baudelocque, no power is capable of breaking the ligamentous substance which connects these two bones.

20. When this last condition obtains, it is usually followed by a melancholy train of evils—pain, inflammation, suppuration, caries, gangrene, and death.

21. The mode of treatment of these evils is reduced to great simplicity, though far from equal certainty—the indications are, 1. To reduce the parts, as nearly as possible, to their natural position, and to secure them thus as effectually as possible. 2. To obviate inflammation and its consequences, as far as may be prac-

following terms, without assigning a single reason for his belief, namely, that "A (relaxation) occurs in a much higher degree in other genera of the mammalia, than in women, but that even in them some slight relaxation does take place."* We would ask for information, has this relaxation been proved to take place; as we do not think, without some evidence, and that positive, this opinion should be received upon the mere ipse dixit of any man; especially as no good can be derived from it.

* Principles and Practice of Obstetricy, p. 6.

ticable. 3. To relieve pain. 4. To give strength at a proper time to the system generally.

22. The first indication must be fulfilled by the proper application of bandages; and we are of opinion, that the simple calico roller is as effectual as any of the more complicated machinery contrived for this purpose. It should be applied as high as the cristæ of the ilia, and a little below the trochanters of the thighs—its length should be so ample, as to secure a number of turns round the parts; and it should be drawn sufficiently tight to fulfil the object for which it is applied. The patient must be confined to a horizontal position, and employ her lower extremities as little as possible, at least in the beginning of the plan.

23. The second indication must be answered by blood-letting, leeching, or cupping; a very abstemious vegetable diet must be insisted on; and the most perfect quiet observed; the bowels should be kept free, but the effects of brisk purging must be doubtful—this plan should be persisted in until fever is subdued, then the course may be changed as in any other case, to a more generous diet, or invigorating regimen. If it run on to suppuration, it must be treated throughout its consequences, as any other abscess should be.

24. The third indication must be fulfilled by the proper exhibition of opium, in its various forms.

25. The fourth must be complied with, by the judicious administration of tonics; as bark, sulphate of quinine, &c. &c., and by the daily use of the cold bath, where there are no contra-indications to render its use improper.

26. I believe I am justified in saying, that women may very effectually recover, when the symphises have suffered from mere relaxation of their ligaments; but I fear we have but little reason to hope for an effectual cure, when the bones have been denuded of their cartilages, though the situation of the woman, by proper treatment, may be made comparatively comfortable.

27. As the derangements either of separation, or of relaxation, of the pelvic symphises are of very rare occurrence, I hope I shall be excused, for giving at length the cases communicated by Dr. A. J. Nicholson, in Vol. iv. p. 452, of the Transactions of the Association of Fellows and Licentiates of the King and Queen's College of Physicians, in Ireland.

28. Dr. N. says, "It appears from the extensive observations of the most eminent accoucheurs in Paris, Vienna, and Dublin,

that this disease is of rare occurrence. In the following case, the woman, after a natural delivery, did well to the fourth day, when she complained of an inability of moving her limbs.

29. "On making inquiry, she informed me, that while at the fire she felt sick, and fell off the low seat on which she was sitting. The nurse tender had left her, and when she returned she found her fainting on the floor. When she recovered she was quite unable to afford herself any assistance.

30. "In the course of the fifth day she was seized with frequent rigours, so violent as to shake the entire bed; and she complained of excruciating pain at the end of the os pubis, and along the course of the left thigh. The fainting and rigours returned to such an excess, that I found it necessary to remain with her. Wine and other stimulants were given, which soon alleviated these distressing symptoms. Her stomach, however, was at times much disturbed; and she was tormented with noise in her ears, and constant sneezing, which greatly aggravated the pain at the pelvis.

"31. "To relieve these unpleasant sensations, she took the black drop in large doses, which agreed extremely well with her. I at first tried opium, but it caused very unpleasant sensations when she closed her eyes, and kept her in a constant state of terror.

32. "On putting the finger over the symphysis, at its edge, crepitation was distinctly perceived; a tumour was also observed on each side of the sacrum, on examining it particularly; the tumour was hard and circumscribed; and about the size of a hazel-nut.

33. "Whenever she was moved, the pain was so agonizing, that she said they must be tearing her asunder. I communicated to the family my opinion, that the ossa pubis had separated, and requested a consultation. In the mean time, I ordered her to be kept in a state of rest, and applied a firm broad bandage around the pelvis, from which she experienced the greatest relief, and found herself more comfortable than any time since her confinement. A solution of muriate of ammonia was applied to the tumours on the sacrum: they did not cause any considerable inconvenience, and were soon removed.

34. "For nearly six weeks she remained perfectly well in her health, and easy in her bed, except when she attempted to move or turn on either side, on which occasion she always suffered the most violent pain. She could stretch her feet downwards, but

could not draw them up again; she found relief from leaning forwards, and placing her elbows on her knees; and when that position became irksome, she returned to her usual one on her back, when she always felt easy. About this time she menstruated, and though much benefit was expected from this circumstance, yet no alteration took place in her complaint.

35. "A gentleman of considerable experience in midwifery, (Dr. Beatty,) saw her in about ten weeks from her confinement; and, after a very careful examination, we found the internal parts in their natural situation, and free from disease. The perinæum was not lacerated, nor was there the least appearance of injury about the external parts; but on considering the seat of the pain, and the inability of moving her limbs, there could be no doubt that the symphysis of the ossa pubis had separated. The broad bandage was continued, with cold applications to the seat of the pain. A bandage, to keep the knees together, was also suggested by Dr. Beatty, and adopted.

36. "In the course of conversation, after it continued for five months, the circumstance was related to a medical friend, who stated that he had a case somewhat similar, though more aggravated, a few years before.

37. "In that instance it appeared that for several days before labour came on, she suffered much from pain and weakness in her back, and a total inability of moving herself, which caused her labour to be unusually severe, as she was unable to render herself any assistance. A crackling noise could be distinctly heard at several yards distance, and not only were the pelvis and sacrum separated, but the disease seemed to have extended to the functions of all the bones of the pelvis.

38. "Many medical men of eminence were consulted, and a variety of medicines were exhibited. Bark, wine, muriate of lime, carbonate of iron, tincture of iron, and every other remedy that could be thought of. At the end of seven months no improvement whatever had taken place, and her situation being truly deplorable, he determined on using the shower-bath, the good effects of which were soon apparent; for in a few weeks she was able to walk on crutches about the room, and in two months to go up stairs, which, to a person so affected, was an operation of no little difficulty. In three months she was fully restored to the use of her limbs, and has had a living child after a tedious but natural birth.

39. "I immediately communicated the result of this case to

my patient, who agreed to do willingly whatever I proposed. A partial shower-bath was contrived: and before the expiration of a month, not only great relief from pain, but much benefit was experienced; for she was once more able to pull on her stockings, and draw up her feet.

40. "About two months after, she expressed a great inclination to try to walk, which I have often since regretted was not agreed to. She continued, however, free from pain, and in good health until December, (just twelve months from her confinement,) when, contrary to my wish and opinion, she was moved to her husband's house, as she had been confined at her father's.

41. "She was put into a chaise, but whether from the motion of the carriage, or the confinement in which she was obliged to be in, during two hours, I cannot say, but all the unpleasant symptoms returned, accompanied with great pain, and the crackling of the pubis.

42. "At this period I gave up my attendance, as I did not approve of the proceeding. She was put under the care of another practitioner, who, I understand, employed counter-extension to keep, as he termed it, 'the opposite sides of the pelvis in opposition.' This was contrived by keeping her upper and lower extremities fastened to the bed-post; but it caused such pain, that she refused to endure it any longer: and matters having become much worse, I was requested to renew my attendance. I found her quite resigned to her situation, but without any hopes of recovery, to which she had so patiently looked forward. I persuaded her to return to the constant use of the shower-bath and belt, both of which had been much neglected.

43. "I visited her at Easter, and staid with her two days; and was satisfied, from close observation, that she was in a fair way of recovery. She was playing with her child on the bed, and she turned herself in various directions without making any complaint; and her sister, who slept with her, told me that she had often turned on her side in her sleep, without experiencing any bad effect the next morning. I contrived a little carriage for her, in which she could lie lengthwise, and which was easily wheeled about the garden. The delightful sensation she experienced on once more breathing the fresh air, after being confined nearly eighteen months, may be readily conceived. A pair of crutches were procured, and directions given, if she should have any inclination to stand or walk, to allow her to make a trial.

44. "I had a letter from her about a month ago, in which she

gave me the pleasing intelligence that she had either walked or shuffled half across the room, and felt no pain from the exertion; and every subsequent account confirms the pleasing prospect of her complete recovery."

Sect. VI.—*Of Deformity of the Pelvis.*

45. Every departure from the healthy dimensions of a pelvis, either by excess or diminution, is considered a deformity—I shall, therefore, first state the admeasurements of the different portions of this cavity, as generally agreed upon by writers, before I proceed to the consideration of such alterations as may justly be considered deformities.

46. The diameter which runs from the superior part of the symphysis of the pubes to the projection of the sacrum, in a well-formed pelvis, is rather more than four inches; while the one running from side to side, a little exceeds five inches; and the one traversing the pelvis diagonally, from behind one of the acetabula to the union of the os innominatum with the sacrum, is nearly the same. The first of these is called the antero-posterior diameter, or small diameter of the superior strait; the second, the transversal or great diameter; and the third, the oblique, which is also properly considered the great diameter. At the inferior part of the pelvis, or the lower strait, the measurements are nearly the same, but reversed—that is, the great diameter of this strait runs from the inferior edge of the symphysis pubis, to the point of the coccyx, allowing for the regressive power of this bone, and is usually rather more than four inches. The small diameter of the lower strait, is from the tuber of one ischium to that of the other; and is about four inches. From this it will be seen, that the great diameter of the lower strait traverses the great diameter of the superior strait at right angles—this should be constantly borne in mind.

47. It must also be mentioned, that not only the diameters of the superior and inferior straits do not coincide, but that their axes are also very different, owing principally to the curvature of the lumbar vertebræ, the promontory of the sacrum, and the retiring of this bone very considerably backwards.

48. The deviations from the standard measurement are so numerous, that it would be almost impossible to enumerate them, were it even useful; I shall not, therefore, descend to such detail, as it would fatigue the memory, without benefiting the understanding. I shall content myself with pointing out only such

variations as may be practically useful; or such as would require a difference in the mode of terminating the labour.

49. Deformities of the pelvis consist, first, in an excess of size in the diameters of this cavity; and, secondly, in a defect of them. The first presents scarcely any obstacle that is not surmountable by common means; as a precipitation of the uterus within the pelvis during gestation is the chief evil, occasioning some inconvenience or embarrassment to the flow of urine, the alvine discharges, and the locomotion of the woman; during parturition, a too rapid labour, threatening the escape of the uterus with its contents, from the os externum; and after the birth of the child, giving rise to a profuse and alarming hemorrhage, by the uterus being too suddenly emptied, by the hasty expulsion of its contents.

50. The first of these inconveniences may be remedied by the application of a proper-sized pessary—the second may be in a great measure prevented by a judicious management of the case during labour: 1. By forbidding the woman to bear down during pain. 2. By opposing the too rapid escape of the child, by pressing firmly against it with the fingers within the vagina, so as in some measure to counteract the influence of the pains, if the uterus be but in part dilated; and if fully dilated, by making a firm pressure against the perineum with the extended hand, so as to allow of the more gradual passage of the head. The third may be at least very much diminished by brisk frictions upon the abdomen, immediately over the uterus; by a proper management of the placenta; and by the immediate exhibition of twenty grains of the powdered secale cornutum.

51. That departure from the standard pelvis, (46,) which consists in a diminution of its principal diameters, is much more common, and much more serious in its consequences, than the one I have just considered: for the difficulties are increased in proportion almost to the deviation from the healthy proportions just enumerated.

52. The most common cause of the distortions of the pelvis, is rachitis in infancy and childhood; and of malacosteon, in the more advanced periods of life. The former of these diseases hinders the proper consolidation of the bones; and thus exposes them to the influence of any pressure that they may be subject to, during its continuance. This being the case, it will be very readily understood how a pelvis shall receive injury while la-

bouring under this disease; for on it is exerted the weight of the body from above, when the child is either sitting or standing: this carries the projection of the sacrum still more forward; while the acetabula serve as fulcra to the lower extremities, when it is standing on its feet, and thus obliges the yielding bones to retire towards the sacrum: hence, in some extreme cases, the approximation of these parts is such, as to leave but a very few lines of opening between them.

53. It rarely happens that every part of the pelvis is equally affected by rickets; and when it is not, the consequences will be different, both in degree, and in location. Sometimes, but one side will have suffered by this extraordinary disease; while the opposite shall be free from all complaint, and preserve its original healthy conformation—at others, it is still more partial, and only affects one small part of this cavity—while again, every portion of it seems to participate in the derangement; then the consequences become most lamentably serious. The upper strait is generally the most injured, and that almost constantly in the direction of its antero-posterior diameter; leaving the transversal one as large, and sometimes even larger, than usual; and the inferior strait sometimes without blemish.

54. When the inferior strait is defective, it is usually in the direction of its small diameter; this is effected by the approximation of the tubers of the ischia. It may also be faulty in several other ways—1. By the spine or spines of the ilia looking too much inward. 2. By the symphysis pubis being too salient. 3. By the symphysis being too long. 4. By the processes of the ossa pubis running down in a too perpendicular direction. The healthy depth and form of the pelvis may be injured in various ways—1. By the sacrum being too strait. 2. By its having too great a curvature. 3. By the coccyx looking too much upwards. 4. By this bone losing its regressive motion, by being anchylosed with the sacrum.

55. But as every degree of deviation does not render labour impracticable by the natural agents of delivery at full time, it will be well to fix the boundary, which the practitioners of Europe of the greatest experience have affixed for it. It seems to be pretty generally conceded, that a labour cannot be successfully terminated, when there is less than three inches in the antero-posterior diameter of the superior strait. When a pelvis has three inches, or even three inches and a half in this diameter,

the labour is rendered, for the most part, tedious, painful, and uncertain.* We hear of some remarkable cases, however, of children being born alive, when there have been but two inches and three-quarters from the pubes to the sacrum; but these must constantly be regarded as exceptions to the general rule; and require, that it may take place, an unusual suppleness in the bones of the cranium.† See Baudelocque, &c.

56. I have appealed above to the experience of the European accoucheurs for the datum, that labour at full time is impracticable, when there is less than three inches in the small diameter of the superior strait.—I do this, because I believe, that the united experience of all the American practitioners, would not have led to a correct conclusion on the subject; as the occurrence of deformity of pelvis in this country is so very rare, as never to have been even encountered by some practitioners of pretty extensive experience. And as far as regards my own experience, I must declare, that I have not met with extreme deformity in American women three times in my life; and when it has occurred to such an extent as to render labour impracticable by the natural powers, it has uniformly been with European women.‡

57. Rickets, among the children in this country, is so rare, that practitioners of considerable experience have declared to me, they have not witnessed a case,—nor is this much to be wondered at; since the remote causes of this disease are rarely present. Our population, even in our largest cities, is not crowded like those in many parts of Europe. That we have many poor, must be confessed; but even these poor enjoy comparatively a purity of air, and a wholesomeness of diet, unknown to many of the same class in Great Britain, or in many parts of the continent of Europe. Very little, indeed, of our population live under ground, or are very thickly crowded together. They are not impacted in confined manufactories, nor exposed to many

* This can be easily understood, when it is recollected, that the transversal diameter of the child's head (82) very rarely can be reduced to less than three inches, with impunity; consequently, when this diameter measures more than three inches, or the antero-posterior diameter of the pelvis measures rather less, the labour must always be protracted, and dangerous to the child.

† The French measure is rather more than the English; that is, the French inch is thirteen lines English. A line is the twelfth of an inch; consequently, two inches three-quarters French, make three inches within a fraction, English.

‡ In this I am happy to find myself supported by the testimony of Professor James, in a note affixed to his edition of Burns' Midwifery. Note k, p. 35.

of their deleterious operations. It is a rare occurrence, if even our beggars do not regale themselves daily, on more or less of animal food; and certainly the population with us, which would correspond with the common manufacturers of Europe, are, for the most part, sufficiently, nay, oftentimes, abundantly, supplied with it; hence our general exemption from rickets, and of course our freedom from its consequences.

58. I have said above, (53,) that when a pelvis is injured in its proper proportions, it is almost always in the small diameter of the superior strait. Dr. Denman, however, declares it to be always in this diameter, when this strait is faulty, and never in the direction of the great one; but in this I must differ from this experienced and respectable practitioner; for it was my chance to meet with two instances of this kind in practice, as well as to be in possession of a natural pelvis, where the diameters at the upper strait are reversed. Besides, Baudelocque admits the fact, though he says it is very rare.

59. One of the cases alluded to above, occurred to me within a few years, and, as it is of some interest from its rarity, I will relate it. On the 18th March, 1824, at 9 o'clock, A. M., I was called to Mrs. ———, in labour with her seventh child. She had been complaining, during the whole of the previous night, but the pains did not become efficient, in her estimation, until about the time I was sent for—at this time the pains were very slow, but pretty forcing. Upon examining per vaginam, the os uteri was found but little dilated, much tumefied, but not rigid. As there was no immediate necessity for my presence, I took my leave, desiring the nurse to send immediately, should any change take place before my intended return. I saw her several times during the day, although no alteration had taken place, in either the force or frequency of her pains. At about 10 o'clock, P. M. of the same day, I was again summoned, in consequence, as the nurse said, of her having had several pains nearer each other, and "*smarter.*" Upon a second examination every thing was found pretty much as it was in the morning—in the course of two hours more the pains became more frequent and urgent; and the os uteri was found more dilated, but still tumid; the head of the child still very high up, indeed, was scarcely to be felt. Two hours more were unprofitably employed, in the hope of the advancement of the head: thinking it probable that this did not take place, because the membranes were entire, and apparently more than usually rigid, I ruptured them and gave

issue to a very moderate quantity of liquor amnii—the head did not yet descend, as was hoped, though more within reach; and as the pains were now rather brisker, without manifestly advancing it, I was induced to examine into the cause of the delay more particularly. Upon a careful search being made as regarded the pelvis, it was found that the point of the coccyx looked very much up into the pelvis; and the projection of the sacrum could not be felt by the finger; it seemed to retire unusually far posteriorly; the sides of the pelvis could be easily traced at the upper strait; and on the anterior portion of the pelvis, immediately behind the symphysis of the pubes, two fingers could be introduced with their breadth between it and the child's head. The head of the child was found to occupy completely the transversal diameter of the superior strait—it now occurred to me, that this was an instance of deformity, in which the transverse diameter was injured, and which of course produced an increase in the antero-posterior diameter; and that the head being placed transversely above, could not enter the strait in that direction. With this in view, I introduced my hand, and placed the head in such a manner as to make the posterior fontanelle answer to the pubes, and the anterior to the sacrum, and then withdrew it. Twenty grains of the ergot were now given, with a hope that the pains would follow each other more quickly, as well as be rendered more powerful—but the first pain after this, made the head descend to the lower strait, and four more delivered it—there was a little delay with the shoulders, but they followed the second or third pain.

60. This lady, though the mother of six children previously, had never had an untoward accident from this peculiar conformation—but her labours she represented as having always been very tedious and severe—four hours of extremely hard pains was the shortest period she had ever known, after she found herself what she called "to be in earnest."

61. During the existence of rickets, the child is constantly exposed to doing itself mischief by almost any position it may take; if it be placed on its feet, two powers are acting to this end; the weight of the body upon the sacrum from above, and the pressure of the heads of the thigh bones upon the acetabula from below; producing either moderate or extreme deformity, as the disease may be more or less severe, or as the patient may be more or less disposed to exert its lower limbs. In sitting, the weight of the body is sustained by the tubers of the ischia,

and the point of the sacrum; hence the latter may become too much curved, and the former be made to injure the length of the processes of these bones, as well as those of the pubes, and thus do mischief to the arch formed by these bones. If carried in the arms too constantly, the whole of the lateral portions of the pelvis may become injured by the pressure of the nurse's arms.

62. To guard against these evils, Baudelocque* suggests a very important practical direction; which is, to keep the patient as much as possible in a horizontal posture, and to permit him to exercise his little limbs freely by sprawling upon a bed or mattress.

63. Injuries arising from malacosteon are more rare, but not less grievous than those from rickets—of the former I have never witnessed an instance. Mr. Burns† says the women of manufacturing towns are particularly obnoxious to it. It begins very soon after delivery, and very frequently during pregnancy; and is comparatively rare in women who do not bear children, and is always hurried in its progress by gestation. Hitherto, no remedy has been discovered capable of arresting its progress, or preventing its occurrence. He recommends to such women as are afflicted with it, to live "absque marito."

64. The pelvis may also be injured by exostoses and tumours, which may give rise to either very difficult, or even impracticable labour—of the former I have witnessed but one case, and that occasioned a rupture of the uterus;‡ of the latter I have never had the misfortune to meet with a single instance. They are occasioned in some instances by enlargements of the ovaria or glands; or they may consist of some adventitious substance within the pelvic cavity. They are said to be often moveable when of the ovarian kind; and fixed generally when of the other. They are found to have but cellular attachments; and are of easy removal, by making an incision through the vagina, and evacuating the contents of the tumour. There is a kind, however, which either adheres by a pedicle, or has a broad base: these can only be removed by deep cutting, and are, for the most part, cartilaginous.

65. Mr. Burns has laid down the following practical rules for the

* System, page 61, par. 92.

† Principles of Midwifery. James' edition, p. 34.

‡ See Essays on Subjects connected with Midwifery, by the Author, p. 75.

government of those, whose ill luck may put them in possession of such cases—1st. "Whenever the tumour is moveable, it should be pushed above the brim of the pelvis at the commencement of labour, and prevented from again descending before the child."

66. 2d. "That we should never permit the labour to be long protracted, but early to resort to the means of relief."

67. 3d. "As it is impossible to decide with certainty on the nature of the contents of many of these tumours, we should in all cases, where we cannot push them up, try the effects of puncturing with a trocar. If the contents be fluid, we evacuate them more or less completely; if solid, we find the canula, when withdrawn, empty, or filled with clotted blood; if fatty, or cheesy, the end of the tube retains a portion, and we are thus informed of its nature."

68. 4th. "When the size of the tumour cannot be sufficiently or considerably diminished by tapping, I am inclined, from the unfavourable result of cases where the perforator has been used, and from the severe and long-continued efforts which have been required to accomplish delivery, to recommend the extirpation of the tumour, rather than the use of the crotchet. There may, however, be situations where the incision ought to be made in the vagina; but these are rare. But extirpation cannot in any mode be proposed, if firm cohesions have been contracted between the tumours and vagina or rectum."

69. 5th. "If the extensive connexions, extent, or nature of the tumour, or danger from hemorrhage, prohibit extirpation, or the patient will not submit to it, and it has been early ascertained that tapping is ineffectual, I deem it an imperative duty to urge the perforation of the head, or extraction of the child, as soon as the circumstances of the case will permit."

70. 6th. "Much and justly as the Cæsarean operation is dreaded, it may with great propriety be made a question, whether in extreme cases, that would not be less painful, and less hazardous to the mother, than those truly appalling sufferings which are sometimes inflicted by the practitioner for a great length of time, when the crotchet is employed; whilst it would save the child, if alive at the time of interference. I am aware that it may be objected to this opinion, that in those cases, the tumour being softer than bone, the same injury will not be sustained, as if the soft parts had been pressed with equal force, and for the same time, against the bones of a contracted pelvis, and that, in point

of fact, recovery has taken place, though the strength of two able practitioners was exerted and exhausted during several hours; but such an instance cannot establish the general safety of the practice."

71. 7th. "It is scarcely necessary for me to add, that there may be different degrees of encroachment, which admit of the safe and successful application of the forceps, and of this matter we judge by the size of the tumour, and the capacity of the pelvis."*

72. This subject is highly interesting to the accoucheur; and I would refer, for farther information, to the chapter from which the above is derived; and where a number of important references are made, to various authorities, for cases illustrative of the views of the gentlemen into whose hands they fell. It is a matter of much moment, in the event of meeting with such a case, that we should be well acquainted with the best mode of treating it; for however rare such instances may be in this country, they certainly may occur; and to be ignorant of the resources of the art upon such an occasion, would be a reprehensible want of information. In addition to the case related by Mr. Burns, we subjoin the following interesting as well as important operation, from the Med. and Phys. Journ. Vol. 13th, p. 178.

73. "An account of two cases of tumours in the pelvis, growing out of the sacro-sciatic ligament, one of which terminated fatally, and the other was cured by extracting the tumour through an incision made into the cavity of the pelvis, through the peritoneum, by P. P. Drew, M. D., Fermoy, county of Cork.

74. "This is a very important paper, insomuch as it authorizes an operation, which, but for the event, some people might have called rash. In the first case, the boldness of the undertaking deterred the surgeons from attempting it, apprehending that the tumour might be connected with the larger blood vessels in the inside of the pelvis. The increase of the tumour at last produced a total interruption to the passages of the urethra and rectum; and during the absence of Dr. Drew, the patient died convulsed.

75. "On making a free opening into the pelvis after death, the tumour was easily turned out, having no communicating blood

* See Davis's Elements of Operative Midwifery, page 90, in which this subject is treated at some length, and some interesting views, and cases, are furnished.

vessels, and only a slight attachment to the surrounding parts, excepting at its neck, which seemed to grow out of the sacro-sciatic ligament. Its texture was gristly, and the body of the tumour was a fat gristly substance. This view of the parts after death, suggested to the operator a question, whether the tumour might not with safety have been removed during life, by making an incision on one side of the perineum and anus, backwards, towards the os coccygis?

76. "About six months afterwards, the second case occurred. The first time Mr. Drew saw the woman was the second day of her labour, in consultation with three other medical gentlemen, whose signatures he has thought it right to affix. The recollection of the former case, suggested the only remedy in the present. Either the Cæsarean operation, or the extraction of the tumour, was absolutely necessary. Besides the well-known danger of the former, even should it succeed, the diseased part would remain. Mr. Drew, therefore, undertook the operation of extracting the tumour by the perineum, and succeeded. The woman was soon after delivered of a living child, and, when the case was transmitted, both were doing well.

77. "On the success of this important operation, which does so much honour to the operator and to surgery, it is unnecessary to make any remarks; but we cannot dismiss the article without wishing gentlemen who are most in the habit of deciding upon such cases, to consider whether some of those tumours, which arise from the ovaria, and are confined to the pelvis, might not with safety be extracted in this manner. We mean not to propose a hazardous operation, where the patient feels no other inconvenience than her increased bulk; but where the offices of the neighbouring parts are so much interrupted as to render life no longer desirable, such a proposal might be submitted to the patient."

Sect. VII.—*The Examination of the Pelvis.*

78. A variety of means have been proposed for measuring the pelvis, in order to ascertain the diameters of the various parts, concerned in the passage of the child: much ingenuity has been expended with a view to, and hope of accuracy; but we have reason to fear that none hitherto projected has attained this end. The pelvimeter of Monsieur Coutouly* is liable to serious objec-

* Madame Boivin has also invented an instrument which she calls "*intropel vimétere.*" Its principles are much the same as Coutouly's, though it differs con-

tions; especially as it affects to ascertain the state of the pelvis, by developing itself within its cavity; for, 1st. It is very difficult, as well as uncertain, in its application; 2d. It cannot be applied but to the upper strait, not being calculated for the measurement of the inferior strait; 3d. Its results are not by any means certain; as they have been known to vary several lines from the true measurement; 4th. It always excites pain, however skilfully applied, and excites action in the parts, so as to render the result very doubtful; 5th. It cannot be applied to young girls to whom the knowledge of the state of their pelves may be highly important. We must not, therefore, permit ourselves to be seduced by its ingenuity and its apparent simplicity.

79. Baudelocque relies with much confidence upon the caliper; and declares, that its results are so uniform, as scarcely to present a line of difference when taken before the body is opened, and what is found after it has been subjected to the knife. I may add, my own few experiments upon the dried pelvis are in entire conformity with the assertions of this most valuable author. The mode of applying it is extremely simple: one of the lenticular extremities of the calipers is applied to the centre of the mons veneris, the other to the centre of the depression of the base of the sacrum, or a little under the spine of the last lumbar vertebra: having ascertained exactly the distance between these extremities, which is accurately done by means of the graduated scale attached to the instrument, you deduct from it three inches for the base of the sacrum, and the anterior extremities of the ossa pubis, if the woman be thin; and a little more should the woman be fat. If this result be so uniformly accurate as Baudelocque declares, we need not want a more exact mode of ascertaining the opening of the upper strait. One fear, however, presents itself to us, that considerable error may be committed, if the extremities of the instrument be not accurately placed upon the points indicated; for I found upon the prepared pelvis, that a half inch higher or lower than the spine of the last lumbar vertebra, would affect the result: now, on the living subject, especially, if that subject be fat, it is not very easy to determine the precise spot. Again, I have seen dried pelves, so peculiarly distorted, as to have the superior portions of the ossa pubes pressed

siderably from it. It consists of two branches, which are introduced separately—one into the rectum, and the other into the vagina; and, it is said, may be employed in the virgin as well as in the pregnant woman. I have never met with a particular description of it.

almost close together; by which means, the symphysis pubis is thrown as much in advance, as these bones lost in their circular direction. In such cases the whole of the anterior superior portion of the pelvis, not concerned in the extension of the symphysis pubis, is made almost to touch the posterior internal portion of the pelvis; consequently, the distance between the symphysis pubis, and the projection of the sacrum is greater than natural; while the superior opening of the pelvis, may not exceed half an inch; yet measuring by the calipers, it would give several inches in the antero-posterior diameter.

80. We may also, with considerable accuracy, determine the antero-posterior diameter, by introducing the finger into the vagina, and placing its extremity against the most projecting part of the base of the sacrum, and allowing the radial edge of it to press against the arch of the pubes; marking the part of the finger which is immediately below the symphysis, by the nail of the finger of the other hand; ascertain the distance between it, and its extremity, and it will pretty faithfully give the width of the small diameter of the upper strait: it must, however, be recollected, that a little allowance must be made for the oblique manner in which the finger descends from the sacrum to the symphisis of the pubes. Or we may ascertain with great accuracy *in time of labour*, the degree of opening at the superior strait, by introducing the hand into the vagina, and placing some fingers edgewise between the posterior part of the symphisis pubis, and the projection of the sacrum—the width of the fingers so employed, can easily be measured after the hand is withdrawn from the vagina. Velpeau* declares, that with the finger we may estimate every species of deformity of the pelvis, wherever it may be situated, or of whatever nature it may be.

81. We may very nearly assure ourselves of the extent of the small diameter of the inferior strait, by placing the woman in such a situation as will give extreme flexion to the thighs; that is, make her squat: the tubers of the ischia can very readily be felt, if the woman be not very fat; ascertain the space between the finger placed on each tuber, and it will give you the width of the lower strait pretty accurately, especially if you deduct two or three lines for the thickness of the bones.

* De l'Art des Accouchemens, Tom. 1, p. 51.

CHAPTER II.

OF THE CHILD'S HEAD.

82. It is absolutely necessary for the well understanding of the mechanism of labour, that the various dimensions of the child's head be acurately known, as a proper relation must exist between it and the cavity through which it is to pass, that labour may not be obstructed. We are to consider four principal diameters, as belonging to the head, viz. 1st, The oblique: this diameter runs from the symphysis of the chin to the posterior and superior extremities of the parietal bones, or posterior extremity of the sagittal suture; 2. The longitudinal diameter: this runs from the centre of the forehead to the top of the lamdoidal suture; 3d. The perpendicular, or the diameter subtending from the summit of the head, to the base of the cranium; 4th. The transversal, or the diameter which extends from one parietal protuberance to the other.

83. The first of these diameters will be constantly called the large diameter of the child's head; the second will be called the longitudinal diameter; and the third the perpendicular diameter; while the fourth will constantly be considered as the small diameter.

84. These diameters are very often altered from their natural measurement during the progress of labour, by the pressure the head sustains in its passage through the pelvis; but all cannot be diminished or increased at the same time. If the head be so strongly pressed as to diminish one diameter, it is sure to be increased in another; for instance, if the transverse diameter be diminished, the oblique will as certainly be augmented; and when the head becomes much elongated, as it sometimes does, it is almost always in the direction of this last diameter.

85. The extent to which this elongation in one direction, and diminution in another, can be carried, must vary considerably in individual cases; owing to the degree of pliability of the bones; the extent of separation of the sutures, and the size of the fontanelles; the transverse diameter may be diminished, sometimes six or eight lines, while the same length may be gained by the oblique. This compression, however, must necessarily have its

limit; and this should constantly be borne in mind ; especially in the application of the forceps. For, if carried too far, there is a risk of fracturing the bones, wounding, or too strongly pressing the brain, or producing extravasation within its substance, or in the cavity of the cranium. Owing to the different degrees of hardness to which the bones of the fœtal head may arrive while in utero, there must necessarily be a difference in the risk the child runs from compression; one head suffering with impunity a loss of six or eight lines in one of its diameters, while half this might be fatal to another. The perpendicular diameter suffers in general but little by the efforts of labour, however long-continued; or however strongly the head may be urged. The longitudinal diameter, when the head is well situated, is but little liable to compression, or alteration; but when it does, it increases the head in the direction of the tranverse diameter.

86. The child's head, like that of the adult, is composed of a number of bony pieces; but they are not united in the same manner: in the child's head the principal bones, (and these as regards our subject, are all we have to consider,) are tied together by a firm ligamentous substance; and the lines formed by this union are called sutures: these are three in number. 1st. The sagittal suture; or the line of union from the anterior portion of the occipital bone to the root of the nose; passing between, and connecting the parietalia, and dividing, yet connecting the frontal bone, into two equal portions. 2d. The coronal suture; or the line which connects the anterior portions of the parietalia, and the posterior and semicircular portions of the frontal bone; and passes from near the superior portion of one ear to that of the other. 3d. The lamdoidal suture; or the line serving to tie together the posterior portions of the parietalia, and the anterior superior portion of the occipital bone.

87. From this arrangement, it will be seen, that the sagittal suture traverses the coronal suture at nearly right angles; and at the points of decussation leaves an open space* or fontanelle. This is not always of the same size, owing to the more or less perfect ossification of the bones—but we always remark in it the following circumstances, and which deserve to be noticed, as they serve to distinguish it from the one next to be mentioned—there are always *four* bony angles at this fontanelle; the edges

* I have met with two instances in children of the same individual, of an intermediate fontanelle—these, in both cases, were situated about midway from the anterior, to the posterior fontanelle.

of which are almost always tipped with cartilage; easily depressed and smooth; and very often, nay almost always, a space of considerable size is left, which is soft, smooth, and yielding, and can be distinctly felt by the point of the finger; this is called the *anterior fontanelle.* The other fontanelle is formed by the termination of the sagittal, in the centre of the lamdoidal suture; and has but three bony angles; two by the posterior and superior points of the parietalia, and the central point, of the occipital bone. The union of these last named sutures does not leave the same degree of opening as the one we have just considered; though sometimes it is considerable, but always much less than the anterior—for when the posterior is well marked, the anterior is constantly found to be larger. Besides the circumstance last mentioned, we frequently remark, that the edges of the bony angles forming the posterior fontanelle, are more completely ossified, and present to the finger, when pressed, a serrated edge; and sometimes these little bony projections are so strongly marked, as to resemble small tooth-like processes; a character which the edges of the anterior fontanelle never possess; and which serves very certainly to distinguish it from the other.

88. It sometimes happens, however, that the sagittal suture is continued through the middle of the os occipitis to its base: in such case, four bony points are offered to the touch; but their size and general character are so different from the anterior, as but very rarely to mislead.

89. We would earnestly recommend the study of the fontanelles and sutures, to the beginner in the practice of midwifery: he should very early accustom himself to touch and distinguish them—it will lead him to a knowledge of the situation of the head when within the pelvis; and constantly, and certainly apprize him of any departure from its best position; and thus enable him, at a proper time, to effect any change that may be necessary, with a view to render the labour safer, easier, and of more speedy termination. No man can render assistance with any certainty, where the head has departed from its proper route, who is incapable of distinguishing this aberration by the touch: he will either not distinguish the faulty position, and thus condemn the poor woman to protracted and unnecessary suffering; or he will blindly, and rashly attempt relief, at the hazard of the lives of mother and child.

90. Many rely upon the position of the ear, for the know-

ledge of the situation of the head ; but we seriously object to this uncertain test: 1st. Because the head may be so high in the pelvis, as to be out of the reach of the finger when it may be essential to determine its position, whereas the fontanelles can always be commanded; 2d. The head may be so impacted in the pelvis, as to prevent the finger from passing to the ear; 3d. And when this is felt, it may give, from some peculiarity of situation, or the imperfection of the touch, a wrong impression of its position ; 4th. When the head is still enclosed within the uterus, the finger cannot always be made to pass sufficiently far under its edge to reach the ear, though the os uteri may be sufficiently dilated for all the purposes of delivery.

91. It is important, that the connexion of the head of the child with the trunk, should also be well understood; otherwise the child may sustain much injury, if not death, from an ignorance of it—it must be constantly recollected, that the head cannot with safety execute a motion upon the neck beyond a quarter of a circle, when it is freed from the pelvis, and the body retained within that cavity; nor can the cervical vertebræ more safely perform a greater sweep, when the head is detained, and the body is without. A want of attention to this fact, I have great reason to fear, has caused the death of more children than I would dare to mention ; especially when they have presented by the breech, feet, or knees, or when turning has been resorted to. I well recollect one instance of footling presentation, where the child was delivered to the head, and the midwife who had charge of the case, could not succeed in delivering it: I was sent for; and was obliged to give two entire turns of the body, before the twist was removed from the neck; I need not mention the fate of the child. Fewer errors of this kind are committed when the head presents; not because the cases are not similar, under equal circumstances; but because the shoulders are seldom long retained after the exit of the head; and, consequently, there is less temptation to employ ill-directed force.

CHAPTER III.

OF THE GENITAL ORGANS.

92. Of the parts concerned in generation and delivery, some are detected without the use of the knife, while others are only brought into view by dissection; hence, they have been divided into external and internal. The external consist of the mons veneris, the labia, the clitoris, the nymphæ, the meatus urinarius, the hymen, the orifice of the vagina, the carunculæ myrtiformes, the frænum labiorum or fourchette, and the fossa navicularis. The internal organs are the uterus, the Fallopian tubes, the ovaria, the ligaments, and the vagina.

93. Immediately over the symphysis of the pubis, and part of the insertion of the recti muscles, we find a prominence, which in the adult is covered with hair—this is the mons veneris; it consists of an accumulation of cellular, and adipose membrane—we know of no decided use of this part; and more especially, for its being covered with hair. Apparently taking rise from this part, we find two bodies of similar appearance and texture, running parallel to each other, in a course downward and backward —these are the labia pudendi; their external faces are protected with the common skin, and are studded, like the mons veneris, with capilli; their internal surfaces are covered with a beautifully fine, and sensible membrane, of a florid colour in young subjects, but which is lost, as age advances: this surface is abundantly supplied with glands, that constantly secrete a fluid for the especial protection of these parts, against adhesion.

94. On separating the labia, several other parts are immediately brought into view. The clitoris presents itself, directly beneath the superior union, or, if you please, the origin, of these bodies. It consists of several parts; namely, two *crura*, which have their origin in the ossa ischia, and running along the branches of the ossa pubis, unite upon the symphysis, and form the *body* of this organ; these crura are connected by ligament to these bones, somewhat after the manner of the penis in males; its external termination, from a supposed resemblance, has been called its *glans;* but it is without urethra, being imperforate; a duplication of the internal membrane of the labia, forms its preputium. It

has, like the male organ, two corpora cavernosa, and an intermediate septum; it has also the power of erection, through the agency of two erector muscles, which arise from the ossa ischia, and are inserted into the corpora cavernosa. It is supposed, but without sufficient proof, to contribute to sensual gratification.* It is this part, when preternaturally enlarged, which has given rise to the various reports of hermaphrodites.

95. It is furnished with blood-vessels from several sources; both arteries and veins are branches from the hypogastrics and vasa pudenda. Its nerves, which arise from the sacri, endow it with great sensibility.

96. Depending, as it were, from the clitoris, are two similar bodies called the nymphæ—they separate more widely as they proceed, and run downward towards the os externum; they are very vascular; they also possess, beside a common cellular structure, an erectile or spongy tissue, somewhat analogous to the corpus spongiosum of the male penis; and in virgins are, like the whole of the internal face of the vulva, of a bright red colour, and are supposed to augment venereal gratification—they certainly are very distensible, and unquestionably contribute, by this property, to diminish the risk of laceration from the passage of the child during labour.†

97. In the centre of, and between the inferior extremities of the nymphæ, the orifice of the urethra is found; and though, strictly speaking, it does not belong to the organs of generation, yet it is of such importance in many cases connected with gestation and labour, as to render a familiar acquaintance with it absolutely necessary in the practice of midwifery. I shall have, upon another occasion, to revert to this part with more exactitude as regards location, &c. The canal or urethra, of which this is the outlet, is from one inch and a half to two inches in length, and proceeds from the urinary bladder: it is more capacious, and more distensible, than the male urethra; permitting, in some instances, calculi of considerable size to pass, without

* Velpeau seems to be of this opinion, but gives no proofs in support of it; he says, "The intimate structure of the clitoris is such, as to allow of an accumulation of blood in it during coition, so as to become swollen and erect; the fine membrane which covers it is very sensible, and hence has been looked upon as the principal seat of venereal pleasure."—*Velpeau, Traité Elémentaire de l'Art des Accouchmens.* Tom. I. p. 60.

† Velpeau denies very dogmatically what is here asserted to be the supposed uses of the nymphæ, (as first suggested, we believe, by Smellie,) but without giving the reasons for his objections.

much inconvenience or distress; and if this tube be slit up to its origin, it will be found studded with numerous mucous lacunæ; two of which at its orifice are particularly large—in the unimpregnated state of the uterus, its direction is nearly horizontal.

98. Below the orifice of the urethra, and almost immediately under the symphysis pubis, the orifice of the vagina or os externum is found—it may be said to occupy, in its undisturbed state, a considerable portion of the arch of the pubes, but its limits are very much increased during the passage of the head of the child at the end of labour; it then extends below the tubers of the ischia. It is surrounded by a sphincter, which arises from the sphincter ani; and is accompanied by the plexus retiformis. This sphincter has various degrees of power; owing either to original conformation, or the habit of exerting it, or both. A medical friend informed me, he had a patient who had such entire control over this constrictor, as to enable her to retain an injection per vaginam, as long as she pleased; and lately I have met with a similar instance.

99. In the virgin state, this orifice is almost always partially occluded by a membranous expansion, called the hymen—this partition is situated immediately within the orifice of the vagina, and seems to spread itself over, and be the connecting medium, of the carunculæ myrtiformes. It is almost constantly pierced by a hole, which gives issue to the menstruous secretion; when it is not, it gives occasion to such an accumulation of this fluid as to produce great pain, and to require, for the most part, the interference of art. This membrane has been considered by many celebrated anatomists, as a creature of the imagination; but I am abundantly convinced by multiplied observation, that it really exists; and in the museum of our Medical College, several beautiful specimens may be seen. Among the Jews, a discharge of blood, which was supposed to proceed from the rupture of this membrane in primo coitu, was considered as the test of virginity.

100. The existence of the hymen, we have just said, has been doubted; men of much learning and talent are enlisted on both sides of the question, and much difficulty would be experienced by the tyro in anatomy, which side of the question he would adopt. But if opportunity present itself for the investigation upon a proper subject, either the dead or living, it will not fail to convince him of the existence of this membrane; for our own experience declares it palpable; and this sufficiently often, to

unhesitatingly assert its existence. One positive fact is worth a dozen negative ones; it not being always found, does not prove that it never exists; and this is pretty much the state of the question upon this point. We cannot possibly doubt its existence, because we have frequently seen it; and if it do not prove to be universal, even where it might be reasonably expected, it should be recollected, that many causes may operate to its destruction, without a vicious inclination, or moral turpitude, being of the number.

101. Besides, we have lately seen an interesting report upon "the condition of the female genital organs at birth," by L. Senn, of la Maternité de Paris," in which he says, "in examining between three and four hundred children, from two to four years of age, I did not fail in a single instance to find the hymen." He adds, "l'hymen ne manque jamais, et ne varie pas dans sa position; mais il présente des différences de form, qui influent spécialment la figure et l'éntendue de l'ouverture du vagin."*

102. Immediately at the external extremity of the vagina, we may observe several small, fleshy, very vascular bodies, which seem to serve as valves to this orifice—these are the caruncule myrtiformes; and upon which, in the virgin state, the hymen appears to spread itself; and are considered, even now, by many to be the fragments of this membrane—but these bodies exist independently of each other; and are, besides, very much too large to be the debris of the hymen—their use appears to be, to hinder the urine, and even other foreign bodies, from passing into the vagina; to contribute to the venereal orgasm; to provide in the last moments of labour a supply of distensible material, and by this means diminish the risk of severe contusion or of laceration.

103. In advance of the hymen, and a little below it, the semilunar fold, called the fourchette, may be seen; it almost as certainly belongs to the virgin as the hymen, as it is rarely found after delivery—between the hymen and the fourchette the fossa navicularis is situated.

104. The space directly behind the inferior terminations of the labia, and before the anus, is called the perinæum—in its natural state it is about an inch and a half in width; is pretty dense, though chiefly composed of cellular membrane; but is capable of prodigious extension.

* Journ. Univ. de Med. vol. xxvii. 272.

Sect. I.—*Of the Internal Organs.*

105. The internal organs of generation consist of the vagina, the uterus and its appendages, the Fallopian tubes, and the ovaria. The vagina is that canal which leads directly from the external organs to the uterus. I have already stated, (99) that the hymen in virgins, and the carunculæ myrtiformes in married or used women, guard, as it were, the entrance of this canal. The length of the vagina may be stated to vary at different periods of life; it is wider at its upper extremity than below; and more especially towards the sacro-iliac symphyses, as its central portion is occupied by the uterus, which hangs pendulous in it. It is not direct in its course; it dips a little downwards at first, and then passing upwards to meet the uterus, with which it is so united as to exhibit, in time of labour, no line or mark of union, forming, as it were, a continuous canal with this organ. It consists of a pretty dense cellular substance, which is very elastic, as is proved after delivery by its quickly restoring itself.

106. The vagina is lined by a continuation of the membrane which covers the internal face of the labia, and is called by some its villous coat; this is the coat that presents itself externally through the extent of this canal. The other coat is more dense; and though not possessed of traceable or distinct muscular fibres, is, nevertheless, very contractile, and hence the formation of the rugæ of this part; the posterior face of this elastic, or, if you please, muscular coat is surrounded by cellular membrane, by which it is connected with the parts immediately in contact with it. These folds or wrinkles are called rugæ—it is asserted by some, that these rugæ are peculiar to women; and to which several duties are assigned: 1st. That they contribute to venereal gratification, (but if this were one of their offices, they are certainly ill situated.) 2d. That they serve as a remora* to the ejected semen, and at the same time offer it a larger surface to be absorbed from. 3. That these folds serve to give greater length and breadth to the vagina, by stretching out during labour, and thus preventing laceration. The vagina is extremely well supplied with blood-vessels; and, when well injected, is found to be highly vascular—throughout its whole surface innumerable glandular follicles may be seen, which constantly secrete a mucous fluid. The vagina in its course forms several points of adhesion by means of cellular

* Speculations on Impregnation.

membrane: 1st. It adheres very strongly to the urethra before; and 2d. Behind, it unites itself pretty firmly at its upper part to the rectum. Besides, there are two small glands, which Bartholine denominated vaginal glands—or the female prostates. Their uses are not accurately determined. Gartner thinks they may give rise to, or have terminating upon them, the ducts he lately discovered; the purpose of which is to convey a portion of the ejected male semen to the ovaries. They most probably secrete the milky fluid discharged by the female during venereal gratification.

Sect. II.—*Of the Uterus and its Dependencies.*

107. The uterus is situated in the pelvic cavity, at the upper extremity of the vagina; it is so placed as to have the bladder before, and the rectum behind, it; and with both of which, there is more or less intimacy of connexion, by intervening cellular membrane and reflected peritoneum. It is of a pear-like shape, but a little flattened; and has its small extremity hanging into the vagina. It has been usual with writers, for the sake of convenience, to divide this organ into three parts; namely, fundus, body, and neck—the fundus is made to consist of all that portion that is superior to the origin of the Fallopian tubes; the body, of the part inferior to them, and extending to the commencement of the neck; and the neck, of all that accuminated portion which distinctly dips into the vagina, and terminates in the os tincæ.

108. The substance of which the uterus is composed, has long been a matter of dispute with anatomists and physiologists—some declaring it to be muscular, while others insist it is in its structure, sui generis. Mr. Bell* decides on the muscularity of this organ, because he has seen and dissected its fibres; so did Vesalius, Malpighi, Ruysch, Hunter,† &c. While Dr. Rams-

* Eclec. Rep. Vol. V. p. 37.

† Velpeau, agreeably to his own declaration, has dissected very many uteri at every period of life; he has examined them when impregnated and when unimpregnated. From these examinations he is led to the following results: 1st, that there is a thin, elastic, cellulo-fibrous structure immediately below the peritoneal covering of this organ; this is sometimes, but not always muscular; but in which, there is no determinate arrangement of fibres. 2dly, A thick layer of fibres, the direction of which is transverse. 3dly, Other transverse fibres, are found situated more deeply—but the longitudinal and oblique fibres predominate, particularly at the neck. And above is seen the supposed detrusor placenta of Ruysch, which appears to be no more than an expansion of the circular fibres belonging to the Fallopian tubes. Art des Accouchmens, tom. 1, p. 84.

botham* denies the fact; and says, "this notion appears to be rather an assumption derived from the contractile powers, which this viscus is known to possess, and which are supposed only to exist on muscularity, than to originate in obvious appearances. However authors may write, and teachers may talk about the uterine muscles, no such structure is evident to my senses." Neither this declaration of Dr. R. nor his reasoning on this point, has in the slightest degree shaken my faith in the muscular structure of this organ—the whole phenomena of labour at full time, and the throwing off of the ovum in aborting, irresistibly force me to this opinion. It is not at present, and perhaps it never may be decided in what manner the fibres of the uterus dispose of themselves in composing this organ; yet enough of its structure is known, I believe, to warrant the declaration, that its functions, as regard labour, are performed by the power of muscular contraction.

I shall avail myself of the judicious observations of Velpeau upon the subject of the muscularity of the uterus, as we think they must carry conviction to the mind upon this often contested subject.

"Previously to asserting that the womb does, or does not, contain muscular tissue, it would have been proper to determine what are the characters of that tissue in general; to show that the red colour is not essential to it, since it is wanting in the muscles of fishes, reptiles, and even in the muscular coat of the human intestines; and that the same is true of the fibrous appearance, since it is met with in the tendons, aponeuroses, &c., but that it alone enjoys the faculty of contractility, and contains fibrine.

In the second place, it should be considered indispensable to recognise a truth that is too much overlooked in our days; which is, that the fleshy fibre must necessarily pass through several less perfect gradations of development; that, in some organs, it remains in the rudimental condition, and is developed only by accident. Thus, the trachea, and the bronchia, even the arteries of large animals, the elephant among others, evidently exhibit muscular fibres while the same organs in the human species rarely exhibit them with any distinctness. The gall bladder, the vesiculæ seminales, &c., are not furnished with them, according to most of the modern anatomists; but let these organs be examined when their coats, strongly hypertrophied, have been long

* Practical Obs. Am. ed. p. 19.

distended, and we shall be soon forced to admit that they possess a muscular coat, as the ancients believed, and as I have seen myself. The womb, previously to puberty, is only a rudimental muscle; when not gravid, its organization, it is true, is but a sketch, but it is only towards the end of pregnancy that we can possibly test its nature. Every circumstance tends to establish that the cellulo-fibrous, elastic yellow tissue, which composes the basis of the inter-laminar, and inter-spinal ligaments of the vertebræ, constitutes also the web of a very great variety of other organs. It is nowhere more abundant than in the uterus. Hence, it appears that this element holds a middle place, and serves in some sort as a passage between the cellular and muscular systems; the chemists have detected fibrine in it, and I have seen it, on various points, transformed into real contractile tissue. I am scarcely afraid to assert that wherever it is met with, it may accidentally develope muscular fibres, and that these fibres exist naturally in some zoological species.

"In order, therefore, to understand the essence of the uterine tissue, it ought to be studied during its gravid state; then, only, is it red, contractile, formed of tomentose fibres; then, only, does it contain a large portion of fibrine: and presents, in a word, all the characters of the most perfect muscular tissue." * †

109. There is no organ in the human body, from whose structure so little can be inferred, as the unimpregnated uterus; in it, when laid open by the knife, we see no manifestation of capacity for distention; on the contrary, we observe nothing but dense unyielding walls, that would seem to bid defiance to any attempt

* Dr. Meigs's translation, p. 63.

† Dr. Blundell says that, in the rabbit, the muscular fibre is much more obvious than in the intestines. Then why may it not be given to the human uterus, if the uteri of animals possess them?—*Princip. and Pract. of Obstet. p.* 81. He also urges the following, in proof of this muscularity:

1. "That the human uterus is muscular, appears when it is developed from pregnancy; and this is so clear, that, if you take a piece of the uterus thus developed, and show it to any anatomist or demonstrator, asking him, at the same time, what it is, he will reply, without hesitation, that it is muscular. 2. The very appearance shows it to be a muscular structure, when thus developed. 3. But there is another proof of uterine muscularity; namely, it contracts like a muscle under the excitement of a stimulus."—*Ib.*

This fact should be decisive; for we have known it to contract a thousand times under the influence of a stimulant. Now, there is no other modification of the living tissue will do this. The only property of this kind that we know is one common to several forms of matter, namely, elasticity; yet the modifications of living structure, so called, never contract by stimulation.

for this purpose—in it we have no promise of the enormous force which it is destined to exert, to relieve itself of the produce of conception—nor can we anticipate the immense distensibility of its vessels from pregnancy, in the diminutive, nay, almost imperceptible ones in its empty state—so wonderful and so varied are the changes which this organ undergoes from impregnation.

110. The cavity of the uterus is small and somewhat of a triangular form; it terminates below in the neck, and its opening is termed the os tincæ. The uterus is lined through its whole extent, by a fine membrane, which, from near the os tincæ to its fundus, and the windings of the Fallopian tubes, is so completely identified with the proper substance of this organ as to defy any attempt at a regular separation—the same may be said of its peritoneal covering; refusing to dissolve its union with the external portions of the body and fundus, by any attempt that may be made for the purpose, until after incipient putrefaction.

111. It is said by all the writers that recognise this membrane, so far as I know, that the whole of the internal surface of the uterus, including the neck of this organ, and the Fallopian tubes, is furnished with linings, from a continuation of the membrane which gives covering to the vagina—I have strong reasons to call in question the truth of this supposed arrangement; so far, at least, as the absence of identity of function will declare the absence of identity of structure—it is now no longer a matter of dispute, that it is from the internal face of the uterus that the menstruous secretion proceeds; yet this fluid is neither furnished by the vagina, nor by the Fallopian tubes; consequently, the membranes lining these parts, cannot be precisely one and the same. I assume here the positive side of the question respecting the internal face of the uterus possessing a membrane, notwithstanding the cavils upon this point, by several late eminent anatomists. As far as authority will justify the assumption, it certainly appears to be in favour of the belief. For, though Ribes, Chaussier, Gordon, Madame Boivin, deny its existence, others insist upon it. Dr. Francis, of New York, assured me, lately, that he had a preparation demonstrating its existence; and Velpeau* asserts, unequivocally, its presence in the following words:—

112. "Il est vrai que, hors de temps de la gestation, on ne peut pas toujours démontrer l'existence de la membrane muqueuse utérine; mais chez plusieurs femmes, mortes encientes ou peu de

* Art des Accouchmens, Vol. I. p. 77.

temps après la couche, je suis parvenu à en enlever des lambeaux très-distincts. Quand même on ne pourrait pas l'isoler mechaniquement, l'analogie suffirait pour convaincre de sa presence; les membranes muqueuses sont exclusivement pourvues de villosités; elles fournissent seules du mucus, dans l'état sain, des mucosités purulentes dans l'etat pathologique; c'est à leur surface qu'on voit paraitre les polypes, les exhalations sanguines." In a word, we think the existence of this membrane cannot be denied, as we have seen it ourselves, after delivery, in several instances; but it differs from other mucous membranes, in being deciduous.

113. The division of the uterus into different portions, was suggested for the convenience of demonstration, and has been employed by all the writers upon anatomy and midwifery, for the last century, at least. I adhere to this division, but from very different motives; many years ago, I insisted on this division as essential to the explanation of several of the phenomena, which this organ was constantly presenting; I shall, therefore, transcribe, without apology, my sentiments, as expressed upon this subject, from my "Essay on the Means of lessening Pain, and facilitating certain cases of Difficult Labour," p. 17, ed. 2d.

114. "I cannot help regarding the neck of the uterus as a distinct and independent part from its body and fundus; having its own peculiar laws and actions; and that this separation of powers is absolutely necessary to the explanation of some of the phenomena exhibited in health and in disease, as well as the influence of certain agents upon this organ.

115. "My reasons for thinking so, are, first, that we find the fundus and body may be distended to a great extent, without affecting the arrangement of the neck; thus, in every uterine pregnancy, we see these parts gradually yield to the influence of the ovum, until about the sixth or seventh month; while the neck remains very much the same as before impregnation.

116. "Secondly, that after the sixth or seventh month, the neck undergoes its changes; while the fundus and body remain in a great measure stationary; so that two distinct processes, or rather the same process, is performed at two different periods, and in different parts, in the order we have just mentioned.

117. "Thirdly, that the neck may be affected by disease, while the fundus and body may remain free, and the reverse; and that the neck may contract and relax, while the other parts are in opposite states—thus, with women who are in the habit of aborting from some constitutional peculiarity of the uterus, we find

the body and fundus can be called into action, while the neck for a long time remains passive; and also the neck may relax, and, after some time, the fundus and body may be excited to contraction. And in cases of atony of the uterus after a too sudden delivery, or any other cause, the body and fundus may contract, while the neck is the only part in fault, and vice versa.

118. "The different conditions of the several parts of the uterus may be in at one and the same time, where atony prevails, partially, would seem to demonstrate the truth of what is here advanced. For it is a fact well known to almost every practitioner of midwifery, that each of the parts into which we have divided this viscus, may separately and independently of the other parts be in a state of relaxation, or contraction, and thus exhibit different phenomena, and be productive of different results." From this it would appear that nature has really established a division of the uterus, which has hitherto been considered as merely conventional. For the most part the uterus has but one cavity, but cases of double uteri are upon record: thus, Lobstein mentions the case of a woman who had two distinct uteri. Vallesneri dissected a female in whom were found two uteri; the orifice of one opened into the vagina, the other into the rectum.

119. Another case is recorded of a double uterus, in a woman "who died of peritoneal inflammation soon after the birth of her fifth child; she was thirty years of age. Her first delivery was laborious; the three succeeding ones natural. With the fifth she died soon after its delivery. The uterus was found to consist of two lobes; one more anterior than the other. The right lobe had evidently contained the last fœtus. It was probable that the first children were contained in the left lobe. The vagina was single."*

One of the most remarkable instances of the vagaries of nature in the formation of the uterus, is that related by Chaussier: (Bulletin de la Facul. de Med. for 1817.) A woman in the Maternité of Paris was delivered of her tenth child, in whom, after death, it was found that the right side of the uterus only existed, with one ovarium and one tube.

120. Lobstein supposed that two uteri were necessary to super-fœtation; here is at least a recent instance in which this did not take place, though each uterus was in turn impregnated. We mention these instances from among many other deviations of this organ, which may truly be said, to have almost as many

* Med. and Chirur. Rev. Sept. 1823.

conformations as any other important viscera in the body. To prove this we need but consult M. Martin's paper on this subject, in Revue Med. Vol. 3d, p. 51.

121. *Fallopian Tubes.* The uterus may be farther divided into an anterior, and posterior surface, and into two sides. The anterior portion of the uterus is rather more convex and thinner than the posterior, and is subject to a less degree of distention—the posterior yielding considerably more, during the progress of gestation; and for this purpose more substance is given to it. From each side of the uterus, and at a line which would divide the fundus from the body, a tortuous body takes its rise; and is named the Fallopian tube; it is hollow; but its caliber is not of a uniform width; at its uterine extremity, the opening is very small; but as it proceeds, it acquires size, and eventually terminates in an opening of some capacity, which is surrounded by an uneven frill, called the fimbria.

122. It has been thought by some, that these tubes were composed of similar tissues with the uterus itself; it is denied by others; but all agree that they enjoy a vermicular motion. Their linings are also said to be continuations of the same membrane which lines the uterus; but I have already called this in question (111)—the internal membrane of each tube is contracted through its whole length into longitudinal plicæ; and furnishes, by means of many little glands, a fluid which constantly lubricates its surface.

123. *Ovaries.* Near to the abdominal extremities of the Fallopian tubes we find two small roundish bodies called the ovaria: these glands, if we may so term them, are of primary importance to the genital system of the female. By them is given the first impulse for the menstruous secretion, and venereal indulgence; by them is furnished, whatever may be contributed by the female towards the formation of a new being.* They are about the size of a common nutmeg, if it were a little flattened; and when cut into, present a glandular appearance—they are not remarkably supplied with blood vessels,† nor do they possess much sensibility.

* By the older anatomists, they were supposed to furnish a fluid similar to the semen of the male; and hence were termed, *testes muliebres.* But this analogy is altogether gratuitous; as their structure is their own, and peculiar, as each important organ must be, as it has its own specific rôle to perform, in the animal body.

† Notwithstanding this poverty of vascularity, we are told of a "fatal hemorrhage from the rupture of the Fallopian tube." As the case is both uncommon and interesting, we will give it as recorded in the Jour. Univers.

"A woman lived upon bad terms with her husband, who one evening, during a

At puberty, we may remark upon their surface, and especially when favourably placed between the eye and the light, a number of little vesicular bodies, of uncertain number, which contain a fluid, capable, it is said, of being coagulated—these are the ova. These are the vesicles of De Graaf, and are in number from ten to twenty. It would be difficult to ascertain the number of the ova, or the vesicles of De Graaf, otherwise than by a very general average of such ovaria as may have been examined, which bears no proportion scarcely to such as have not been examined; and it would scarcely be possible to make an estimate, by taking the average of the children each woman may have during the period she was subject to child-bearing; for this would only express the absolute number, without being able to ascertain the cavity of all such as may not have had their ova called into action. That they are much more numerous in some women than in others, we cannot doubt, and if we are to adopt this rule from the number of children borne by such individuals, as have had every reasonable opportunity to have their ova called into action, we would say they might exist from one to thirty-two; for this last number of impregnations I am indebted to the lady to whom this number happened. She had borne eleven children at full time, the remaining number was twenty-one abortions, from the third to the seventh month.* Nor would it perhaps be fair to limit the number, as we are by no means certain that the ovaries may not have the power to form them ad libitum. According to De Graaf, both blood-vessels and nerves spread themselves upon their tunics, in a manner similar to that which takes place upon the yelk of an egg, while it preserves its attachment to its ovary. There is little question now, that the ovaries furnish the ovules—at least if any dependence can be placed upon the observations of Prevost and Dumas. They declare

violent quarrel, threw a chair at her with all his force. She was seized with a violent colic early next morning, attended by an alarming purging and vomiting. The belly began to swell after these symptoms had shown themselves; and after thirteen hours of illness died in convulsions. In consequence of suspicion that she had died of poison, the body was taken up after it had been ten days buried, and carefully examined, by order of the proper authorities. It was found fresh, and free from contusions or lividity. All the organs in the head and chest were found sound, as well as the alimentary canal; but the belly contained a large quantity of serous fluid and coagula, to the amount of eight pounds or more. And after a careful search, it was found to proceed from a perforation in the right Fallopian tube, near its attachment to the uterus."

* See page 495, par. 1336.

they always exist in the ovaries of the adult female; but cease to be formed in old age. Animals that copulate at all seasons, have them constantly during the period they are capable of being fecundated; while such as have a stated period, as once a year, have them only during the period of heat. When these are displaced by either fecundation or otherwise, they leave evidences, that they occupied certain portions of the surface of the ovaria.

124. We may also remark upon the face of the ovarium, a number of little spots, which, from their colour, are named corpora lutea; these, until lately, were supposed to be the cicatrices of removed ova; but Sir Everard Home* has pretty satisfactorily proved, that these marks exist previously to impregnation; and that they have no less a destiny, than to furnish the ovum, and prepare it for impregnation. In the virgin state he declares a corpus luteum, to be a solid, compact, glandular body; and when the ovum is liberated, the cavity it leaves is filled with blood; which, after awhile is absorbed, and a small pit remains.

125. Dr. Plagge of Bentheim, has lately been investigating the formation of the ovum in the mammalia. He entirely agrees with Sir E. Home and Mr. Bauer, as to the formation of the ovum in the ovary before impregnation; but he thinks he has discovered, that, instead of being formed *in* or by the corpus luteum, as affirmed by these gentlemen, the ovum, as well as the corpus luteum, are formed in the vesicles of De Graaf; and that the corpus luteum bears the same relation to the *ovum* in the ovary, as the placenta does afterwards in the uterus. He observed, that a little areola first appears on the membrane of the vesicle; and not long afterwards, the rudiment of the future ovum may be seen like a gray speck in the middle of this areola, and on the inside of the vesicle. After the rudiment has increased till its diameter is equal to three lines, (in the cow,) the corpus luteum begins to appear on the peduncle of the rudiment, betwixt it and the membrane of the vesicle, and the ovum is thus gradually pushed towards the surface of the ovary, to be impregnated.†

126. The whole of the abdominal portions of the uterus, namely, the fundus and body, are covered with peritoneum—and as it passes from the sides of this organ, it forms a duplication towards the lateral portions of the pelvis; and makes what

* See Phil. Trans. years 1817 and 1819. † Jour. Complémentaire, &c.

has been termed the broad ligaments—each of these ligaments has an anterior and a posterior portion or pinion—in the anterior pinions, the Fallopian tubes are included; and in the posterior, the ovaria.

127. The round ligaments, two in number, originate from the superior lateral parts of the womb, and run in the doublings of the broad ligaments; they then rise to the brim of the pelvis, pass over it through the abdominal rings, and lose themselves, as it were, in the groin. These ligaments are extremely vascular during pregnancy; and it is to the *engorgement* of them, that Baudelocque attributes the pain the woman sometimes feels in these parts as gestation advances. These two sets of ligaments, have been supposed to give support, or permanency of situation to the uterus: if this be the design of them, it must be confessed they perform their duties in a very inefficient manner—for it is well known to every accoucheur, that nothing can be more uncertain, than the situation of this organ; for every change in the abdominal viscera, every alteration in the contents of the bladder, and rectum, imposes upon it a new position. Mr. Charles Bell has, however, made a new, and what he seems to think, an important suggestion, as to the offices of the round ligaments; he supposes they give rise to a number of muscular fibres, which perform a very important rôle in the economy of gestation, and of labour; while, at the same time, they perform the offices of tendons rather than of ligaments. I shall refer the reader, for a consideration of Mr. B's. opinions upon this subject, to "Essays upon various Subjects connected with Midwifery," by the author, p. 461 et seq.

128. The uterus is supplied with blood vessels from the spermatics and hypogastrics. These arteries are divided into two orders by some—the first supplies the substance of this organ, by penetrating it at the neck; the second, are those given off by the aorta, or emulgents; and after supplying the ovaries and broad ligaments, run to the sides of the uterus itself. The anastomoses of these arteries are very frequent, and the two sides of the uterus reciprocate in their distribution and union—thus, the arteries of the right side unite very frequently, and intimately, with those of the left; and while those from the fundus join with those of the cervix. They pass in such manner, as to be much convoluted, and to suffer strong compression from the substance or tissue through which they are transmitted. The veins observe a similar distribution, and eventually pass on the

internal iliæ and ovarian veins. The intercostal, the renal plexus, and sacral, furnish it with nerves. Mr. Hawkins informs us, that "the nerves of the human uterus are supplied from six different plexuses. The spermatic plexus within the abdomen; the great hypogastric plexus between the common iliac arteries; and four within the pelvis; two of which are situated on each side of the uterus. All of these have the peculiar appearance of the sympathetic nerve, and they are intimately connected with all the other nerves of the viscera."* There are a number of nerves that spread themselves on several portions of the internal face of the pelvis, some of which may be powerfully impinged upon during the passage of the child, as when the relation of the head is very strict to the diameters of the pelvis. As the anterior crural, obturator, the sciatic trunk, &c., as they are, or at least part of them, but ill-protected under some circumstances, against pressure from the child, or from the application of forceps, we have seen a case where, from the former cause, the most violent and fearful cramps ensue, the moment the child's head would enter the superior strait, and thus instantly suspend the contractions of the uterus: this has obtained with each child the lady has borne up to this time. In each of these cases I was obliged to deliver with the forceps. From the second cause (forceps) every practitioner, who has frequently employed these instruments, must have observed very distressing cramps from their application. And every body must have witnessed these cramps when the head of the child is large, either relatively or positively, when the face is about to sweep into the hollow of the sacrup, while it is executing its pivot-like motion, from the head pressing upon the sacral nerves especially, and by the leg and thigh that are cramped, we may almost always decide whether the presentation is the first or second of Baudelocque and of the arrangement of the authors. It is also most abundantly provided with lymphatics.† Having thus, in a cursory manner, given the anatomy of the uterus, it would seem proper that its functions should next be considered; and first—

* Philosoph. Trans. 1825, p. 70. † Cruikshank on the Lymphatics.

CHAPTER IV.

OF THE EFFICIENT AND FINAL CAUSE OF THE MENSES.

129. By menses we mean the periodical discharge of a coloured fluid resembling blood, happening every lunar month; commencing at puberty, and continuing until about the forty-fifth or even fiftieth year, unless interrupted by pregnancy, suckling, or disease."

130. It was formerly a matter of doubt from whence this discharge proceeded; some supposed it came from the uterus itself, and others from the vagina, or both. This question is now put to rest; Morgagni, Dr. William Hunter, and others, having seen it proceed from the os uteri, in cases of procidentia. It was also a matter of much uncertainty, which class of blood vessels furnished this fluid: Ruysch declared it to be from the arteries; Vesalius from the veins; and Simpson from certain appropriate sinuses. If the views I shall take of this interesting phenomenon be correct, namely, its being a secretion, it will be found to proceed, most probably, as Ruysch supposed, from the arteries, as all the secretions, so far as we yet know, with the exception of the liver, are performed by arteries.*

131. It is uncertain who first suggested the idea, that the menstruous discharge is a secretion—the credit of it has been given to Haller, Bordeu, Hunter, and Saunders—the latter unquestionably taught it publicly in 1784, and how long before I cannot ascertain; but this is of little consequence now.

132. I have, however, ascertained that the doctrine of secretion is of pretty ancient date. It is mentioned by Ramazzini in unequivocal terms as a secretion, as the following passage declares:—"Il-y-a tout lieu de croire que le sang des règles a quelque qualité maligne et cachée; et on lui a donné á juste titre le nom de secrétion et excrétion." In this extract, the term "secretion" appears to be familiarly used; and one most probably employed in common parlance. And Fourcroy, the translator of this work

* The truth of this last assertion, however, has been lately called in question by Dr. Holland, from Mr. Abernethy having met with an instance of the secretion of bile where there was no vena porta; and that, in the whole of the molluscæ, the liver is very large, and is supplied by the aorta alone.—*Dr. Holland on the Physiology of the Fœtus, &c.*

from the Latin, in a note to a part of the paragraph from which the above extract is taken, says, "Rien cependant n'etoit plus naturel, sans avoir recours aux phénomènes chymiques, que de concevoir le flux des règlés, comme une secretion qui a son organe, ses periods règlées, sa marche et son department, ainsi que toutes les autres secrétions."* Ramazzini's work was first published in 1700; consequently, the suggestion of the menses being a secretion cannot belong to either Haller, Bordeu, or Hunter; indeed, it would seem from the manner in which it is mentioned, to have been taught before this period, as no claim of originality is preferred.

133. Independently of the evidence derived from the structure and diseases of the uterus, that the menses are the result of a secretory process we are to regard the appearances of the discharged fluid itself, as confirmatory of the suggestion. This discharge must be either a portion of the common mass of blood as it circulates at large in the system, or it must have undergone some change during its separation from the common mass—if the former, it should exhibit the appearance of blood detracted from any other part of the body by opening a vessel for the purpose; but this is not so; if the latter, it is probable that it has been eliminated by that process termed secretion. This opinion is farther strengthened by the following considerations of the physical properties of the fluid itself: 1st. Its colour is between the arterial and venal blood; being less brilliant than the former, and more florid than the latter: 2dly, It never separates into parts; blood drawn, or evacuated from any other part of a healthy body, does separate, in a short time, into its principal component parts: 3dly, It never coagulates, though kept for years;† while other blood, when free from disease, quickly does, when exposed to the influence of the air: 4thly, Its odour is remarkably distinct from that of the circulating mass; and it is less disposed to putrefaction.

134. It is thought, by some, to differ materially from common blood, from it not possessing fibrin; of this I cannot speak with certainty; but I am disposed to believe, that this part of the blood has only undergone a change during elaboration; more

* Ramazzini, Essai sur les Maladies des Artisans, traduit du Latin, par M. de Fourcroy, p. 215.

† My friend, Dr. Physick, informs me, that Dr. Clark, of London, used to exhibit a vial of menstruous blood which had long been in his possession, but which had never separated into its component parts.

especially, as the coagulating lymph is always found to accompany the red globules, whenever blood has been accidentally extravasated, or designedly drawn; my reasons for thinking that the fibrin of the blood has only suffered an alteration of property, and that it is constantly present in the menstruous blood, but is altered, are, that, in many instances, nothing more is necessary to this effect, than the establishment of some peculiar arterial action—thus, we find, in certain kinds of small-pox, fevers termed putrid, scurvy, &c., the blood loses the power of coagulation; the blood of those who die from lightning, blows upon the stomach, &c., it is said that the coagulating lymph loses the capacity to coagulate—therefore, the mere absence of coagulability, is not sufficient to prove the absence of fibrin.

135. In this, nature has shown her beneficence; for to what wretchedness would the woman be doomed at each menstrual period, did it retain its property of coagulation? Mr. Hunter thought that the property of coagulation was lost from the blood losing its living principle during the secretion—but to this we cannot subscribe; as this fluid, as has already been noticed, is thought to resist putrefaction longer than common blood.

136. I have stated in the definition of "menses," that it first takes place at puberty, or that period at which the animal is capable of propagating its species—this period must vary as it may be influenced by climate, constitution, and modes of life; always being earlier in hot than in cold countries; sooner in cities than in the country, &c. Before they make their appearance, they almost always announce themselves, in the altered appearance of the female—the mammæ increase in size; the voice undergoes a slight change; the pubes are covered with hair; and the best proportions the individual is susceptible of, are now suddenly and successfully developed. The mind is also replete with changes; puerile amusements now yield to maturer enjoyments, and rational inquiry; capricious attachments give place to sincere, unaffected, and permanent friendship; in a word, a new creature, almost, seems to be suddenly formed. Besides the physical and moral changes just spoken of, there are other circumstances, which mark the pubescent period to be near at hand—such as headach, dulness of the eyes, pains in the pelvic region, lassitude, whimsical appetite, slight leucorrhœa, &c., and after these have continued a longer or shorter time, they suddenly depart, and a discharge of a small quantity of fluid from the vagina, and

this not necessarily coloured at first, is found to have taken place. The last named circumstance is worthy of attention; as it will serve to explain those cases of impregnation which are said to have taken place previously to the eruption of the menses.

137. The menstrous period is usually from four to six days; and, during this time, from four to six ounces of fluid are discharged—in this there must necessarily be some variety; depending upon constitution, &c. After it ceases, the woman is exempt from a repetition, for twenty-eight days or a lunar month less the time it is flowing; but at which time it returns with distinguished regularity—so much so, indeed, with some women, as to enable them, not only to indicate the day, but also the hour—during the flow, the appetite, with some, becomes capricious; they are languid, pale, or hectically florid; a dark stripe most frequently may be observed below the eyes; and, with many, a dragging sensation is felt about the hips and loins, during the whole period.

138. In this manner are women subject to this flux, until between the fortieth and fiftieth years; at which time they cease, never to return. For the most part, as the period of cessation approaches they fail in their wonted regularity—sometimes the period is protracted to six or seven weeks, and then instead of five or six ounces being evacuated, there may be a loss of twenty or thirty; or there may be merely a show, as it is termed—at other times the period may be anticipated by as many days as it had exceeded before; and the discharge may be as vague as I have just mentioned.

139. I have known several instances, where the eruption of the menses was constantly preceded by strong hysterical paroxysms, of greater or less permanency: the menses would now appear, and instantly the system would be tranquillized, and the woman return to her ordinary state of health. In one case, a severe pruritus accompanied this convulsive state, to the great annoyance of the poor young woman who was the subject of it.*

* This young woman was perfectly relieved from these disagreeable symptoms, by camphor in ten grain doses,† at the commencement of the menstruous period, and liberally washing the parts in the interval with a strong solution of borax.

† The writer of the "Critical Analysis of Dr. Dewees on Midwifery," in the London Med. & Phys. Jour. for July, p. 72, says, "We should be unwilling to give ten grains at a dose (of camphor) without having first tried, by the exhibition of a smaller quantity, the power of the patient to bear the remedy."

I can assure the gentleman, that I rarely, if ever, give this medicine in smaller doses; nor have I ever witnessed the smallest inconvenience to follow, which was attributable to the largeness of the dose. Idiosyncracy may make any quantity improper.

140. From the earliest records of medicine to the present day, the ingenuity of the philosopher has been exercised to point out the efficient cause of this peculiar habit of the human female; I shall therefore cursorily pass in review the various hypotheses which have been invented for this purpose, and first

Sect. I.—*Of Lunar Influence.*

141. The influence of the moon was very early assigned as the efficient cause of menstruation: from either the real or supposed effects of this luminary upon tides and diseases, it was easy to believe it might have a power or control over some of the healthy functions of the body; and, as the menstruous flux was periodical, and observed a lunar period, or interval, it was no great stretch of the imagination, to suppose its return connected with the movements of this body: this opinion is not entirely exploded at the present moment; though, to destroy this hypothesis, it is only necessary to state the fact, that there are women menstruating promiscuously every day of the year, and every hour of that day. Galen, at an early period, saw the weakness of this scheme, and accordingly invented another; namely,

Sect. II.—*The General Plethora Doctrine.*

142. This hypothesis has higher claims to our attention than the one we have just been considering; for it is both ingenious and plausible. He began with stating, 1st. That women were more disposed to plethora than men; 2d. That to get rid of this superabundance of blood, some outlet was necessary, and that this outlet was the uterus; 3d. That this state of fulness was essential to the female system, as it must make provision for the child, while in utero, as well as provide it sustenance after it is born; and that these objects were effected by the suppression of this discharge during pregnancy and suckling; 4th. That when the uterus failed in destroying the plethora, by yielding the menses, some other part performed a vicarious office, and gave issue to the blood: hence, hemorrhages from the lungs, bowels, ulcers, &c.; 5th. That when this evacuation failed to appear under ordinary circumstances, the quantity of blood was below the ordinary standard; and that it could only be recalled by such remedies as would increase the measure of this fluid.

143. To the first of his positions, it may safely be said, that strong doubt must be entertained of the fact; for, though women may exercise less than men, they perspire more; and their ingesta is certainly less.

144. And if there be a plethora, it must be occasioned by five or six ounces of blood; yet, it is well known, that if five times that quantity were drawn just before the period was expected, or during its flow, that it would neither prevent the eruption, nor diminish the quantity that would otherwise be expended. Of this I am certain, from the following facts: Many years since, I witnessed a singular periodical hemorrhage, which was of several months' duration, from the ear of a young lady; it would commence at about 11 o'clock, A. M., every day, with the utmost regularity, and, after giving issue to an ounce or two of blood, it would spontaneously stop, and not recur until the same hour of the next day: yet this young lady menstruated with the utmost regularity, both as to period and quantity. It may not be uninteresting to state, that this affection was cured by the application of a blister near the part, after very many other remedies had fruitlessly been tried. Another case fell under my observation, which goes still farther to prove that general plethora has no agency in the production of the catamenia. A young lady asked my advice for a daily discharge of blood from the anus, of several years' continuance: she would lose, very frequently, from half a pint to a pint at a time, and smaller quantities almost daily; she, of course, was feeble, and far removed from plethora; yet she menstruated regularly, and never employed less than a week for the discharge.

145. To the second, it may be answered, that men, however plethoric, have no such compensating discharge.* To the third

* Dr. Burdach, a German writer, in a work entitled "Physiology as an Experimental Science," considers menstruation as depending upon causes either general or local. "Its general cause," he says, "is evidently to be found in the circumstance of the blood being so abundantly generated by the female system, as to produce, every four weeks, an excess, which requires to be in this manner evacuated." To prove this, he has but renewed the old doctrine of Galen, just noticed, and at once assumes a principle which remains to be proved; namely, that the female system generates a superfluous quantity of blood, and requires to be removed from the system by an office of the uterus. We deny that any satisfactory proof has yet been offered in support of this assertion, and for the reasons assigned above; for Dr. B. only employs the arguments just mentioned to sustain this hypothesis, and which, we think, are readily disproved.

Dr. B. accounts for this tendency to plethora in the female, by referring it to "a greater activity of the productive powers generally, and consequently of sanguification existing in the female than in the male system; for the extent of the menstrual discharge has an immediate relation with the activity of the productive powers." This we utterly deny, as we have known many very plethoric females who have had sparing menses, and many that laboured under even a suppression

it may be declared, the means are not adequate to the end: for the embryo would not require, for a long time, any thing like five or six ounces of blood for its support; and, at a more advanced period of gestation, it would be altogether insufficient. With respect to its subserviency to lactation, how totally insufficient would it be for a healthy, or even a very feeble infant! The fourth I must protest against, as a fact; for, in all good faith, I avow, that in more than forty years' practice, I have never witnessed an unquestionable case of this kind. And, as regards the fifth, the daily experience of almost every practitioner must be set in opposition to it; for, though we very frequently employ stimulants for the restoration of the menstruous secretion, yet they do not act by filling the blood vessels, but by increasing their activity; but are we not obliged, almost always, to employ depleting remedies before we can advantageously use tonics? and do they not sometimes succeed without the agency of stimulants?

146. The doctrine of fermentation of the chemist; the mechanical solution of Dr. Friend; the preposterously indelicate hypothesis of Le Cat and Brown, do not deserve an attempt at refutation; we shall consign them, with some others, to "the tomb of all the Capulets," from whence, we trust, they will never be recalled.

147. I cannot, however, dismiss this part of my subject, without noticing the highly ingenious explanation of Dr. Cullen, by whom it was taught with all the force of eloquence, and every charm of fancy; and its plausibility, and speciousness, was such as to enlist in its defence, almost all the teachers in Europe, and not a few in America. It is called the theory of

Sect. III.—*Topical Congestion.*

148. Dr. Cullen supposes that the body is developed pretty much in the order of necessity, and the size of the vessels belonging to the part: hence the head and superior extremities are first unfolded; then the lower extremities; and lastly, the uterus. "But," says he, "as the vessels of every part by their distention and growth, increase in density, and thus give greater resistance to farther growth; at the same time, by the same resistance, they determine the blood in greater quantity into parts not yet equally developed. By this means the whole system

of them; while, as we have already observed, we have seen them abundant in debilitated females.

must be successfully and equally evolved. Upon these principles, there will be a period in the growth of the body, when the vessels of the uterus will be in equilibrium with the other parts of the system; *and their constitution may be such*, that their distention may proceed so far as to open their extremities, terminating in the cavity of the uterus, so as to pour out blood there; or it may happen, that a certain degree of distention may be sufficient to irritate and increase the action of the vessels, and thereby produce a hemorrhagic effort, which may force the extremities of the vessels, with the same effect of pouring out blood."

149. In either way he accounts for the first appearance of a flow of blood from the uterus of women. In order to this, he does not suppose any more of a general plethora in the system, than what is constantly necessary for the successive evolution of the several parts of it; and proceeds upon the supposition, that the evolution of each particular part must necessarily depend upon plethora, or increased congestion in its proper vessels. Thus he supposes it to happen with respect to the uterus; but as its plethoric state produces an evacuation of blood from its vessels—this evacuation must empty these vessels more especially, and put them again into a relaxed state with respect to the system. This empty and relaxed state of the vessels of the uterus, will give rise to a new congestion, till they are brought again to that degree of distention, that may either force their extremities, or produce a new hemorrhagic effort that may have the same effect. Thus, an evacuation of blood from the uterus, being once begun by the causes just mentioned, it must, by the operation of the same causes, return after a certain period, and must continue to do so till particular circumstances occasion a considerable change in the constitution of the uterus. What determines the period to nearly a month, he cannot explain; but supposes it to depend upon a certain balance between the vessels of the uterus and those of other parts of the body. This must determine the first periods; and when it does so, it can be understood, that a considerable increase or diminution of the quantity of blood in the whole system will have but little effect in increasing or diminishing the quantity distributed to the uterus. And when this evacuation has been repeated for some time at regular periods, it may be supposed that the *power of habit*, which so readily takes place in the animal system, may have a great share in determining the periodical motion of the uterus.

150. Upon this celebrated hypothesis, I shall beg leave to observe, first, that he has admitted more causes than are necessary to account for the phenomena—thus, at one moment, "their distention" is such "as to open their extremities, terminating in the cavity of the uterus, so as to pour out blood there;" in an instant after, he conjectures, "that a certain degree of distention may be sufficient to irritate and increase the action of the vessels, and thereby produce a hemorrhagic effort, which may force the extremities of the vessels, with the same effect of pouring out blood." Here two distinct causes are assigned; namely, "distention," and a hemorrhagic effort," for the same effect;—both of these could not possibly operate at the same time, if they be distinct agents; and if they be not, we are certainly entitled to be informed, in what they differ; for we cannot understand what is meant by a hemorrhagic effort, if it be distinct from such a degree of distention, as shall force the vessels to yield blood. 2d. That if this scheme be true, the menstruous discharge is nothing but a common hemorrhage; for here are vessels distended to such a degree as to oblige "their extremities terminating in the uterus, to *pour out blood* there." Now, what are we to understand, in this instance, of blood being poured into the cavity of the uterus, different from blood being poured into the cells of the lungs, or the cavity of the stomach, when the sides or extremities of their vessels are so forced as to yield their contents? We see none; yet the appearance of the menstruous blood is entirely different from hemorrhagic blood.

151. Third. Were this doctrine true, no woman could possibly preserve the fruit of her womb to the full period of utero-gestation; for it is a fact as well ascertained, as any connected with our history, that, so soon as conception takes place, an increased flow of blood to the uterus takes place: now, if upon common occasions, much less blood will produce such a "distention, or hemorrhagic effort" in the vessels terminating in the cavity of the uterus, that they shall pour out blood there, what is there to prevent an increased quantity, the consequence of pregnancy, from doing the same, and thus deluging at once the delicate and unsettled ovum?

152. Fourth. It would seem in some measure essential to this hypothesis, that "habit" should exert a certain influence, to ensure the periodical returns of the catamenia—it can, we think, in one moment, be shown that "habit" has not the smallest agency in the production of this discharge; for it is notorious to every

body, that this is constantly interrupted in married women for many months together—nine months of pregnancy, twelve or even eighteen months of suckling; during the whole of which time, the menses do not make their appearance; yet, the child is no sooner taken from the breast, than this evacuation establishes itself, and with as much regularity as if it had never been interrupted. Since then, in these instances, "habit" has had no influence upon the first return, it cannot possibly be necessary to any number of returns.

153. From what has just been said, it appears that hitherto nothing satisfactory has been advanced upon this curious subject —it yet remains for some future Haller or Hunter to enrich medical science with a rational explanation of it.

Sect. IV.—*Final Cause.*

154. The final cause of the menses is perhaps enveloped in some obscurity; but of this we know at least one incontrovertible fact; namely, that the healthy performance of this function is in some way or other connected with the capacity for impregnation; as no well-attested instance is upon record, where this has taken place in a female who never had had this discharge, or even when it was not of a healthy character, and with a greater or less degree of regularity. It may perhaps be said, that in the instances of women who had never menstruated, there was some imperfection in the genital organs; and this perhaps was the case pretty uniformly. I know it was so in one, which fell under my own notice—a young lady of twenty-eight years of age had never menstruated, or given any evidence of the necessity of this evacuation, as she very uniformly enjoyed good health and spirits. She was, however, seized with an inflammation of her bowels, and soon became alarmingly ill; I was requested to visit her in consultation; and as she never had menstruated, and as she suffered severe periodical pains in the region of the uterus, it was supposed that some derangement of this organ might be the cause of her present suffering; I was accordingly requested to examine her per vaginam. The finger passed into the vagina with some difficulty, but the uterus was readily touched. It presented to the finger a size not exceeding the thumb of a man; and its neck was as slender as a common writing quill, and about half an inch in length. The pubes were covered with the usual quantity of hair, and the mammæ were pretty well developed—the imperfection in this case consisted, most probably, in the want of size

of the uterus alone; as it is more than probable, from the state of the breasts, and covering of the pubes, that the ovaria were not in fault—moreover; she was fond of mixed society; and, I have reason to believe, she was ardently attached to a gentleman, but refused to marry, on account of the absence of the menses. She died two or three days after the examination; but leave could not be obtained to inspect the body.*

155. M. Renaudin gives an account of a woman in whom the uterus was wanting. The subject died of a disease of the stomach; had never menstruated; was of small stature, only three and a half feet high; imperfect in intellect; breasts not developed. The external genital organs were well formed; the hymen in part existed; and a finger introduced into the vagina encountered, instead of the neck of the uterus, a small tubercle. Between the bladder and rectum, instead of the uterus, there was a kind of firm cord about the size of a quill, communicating at one extremity with the vagina, and also with the Fallopian tubes. These tubes were very large, and formed a kind of sac, where they opened into the vagina. Some traces of ovaria were faintly observable. The vagina perfect; the neck of the uterus imperfectly formed; the body and fundus altogether wanting. Thus, we see that the want of a uterus is by no means unique;† but to render such accounts interesting, the previous history of the subject should be pretty well known. The case just recorded is valuable, because we are informed of the smallness of the body; the absence of certain functional processes; and the want of development of certain parts connected with the genital system, together with the weakness of the intellectual faculties; and it would be curious to compare the general developments of the body and mind with the absence of the principal genital organs.‡

* Since this time, I have been consulted on a similar case, as far as regards the general condition of the female. She is twenty-four years of age; rather tall, and apparently enjoying a healthy conformation. She has never felt any pain or other inconvenience that would give rise to the opinion, that this absence of the menses was owing to an occlusion of the vagina. She is frequently attacked with severe pain in the region of the spleen, which will last for several days together. She also suffers greatly from headach, palpitation of the heart, and other nervous symptoms. The mammæ, her mother informs me, are well developed, and the pubes furnished with capilli. She has had several eligible offers of marriage; all of which she has rejected, from an opinion that it would be dishonest to marry under such circumstances. I was of opinion that there was nothing to be done in her case, and therefore did not prescribe.

† Lieutaud also mentions a case in which it was altogether wanting in a woman he dissected. Coitus erat difficilis.

‡ See Archives Generales.

156. But cases like those just related cannot invalidate the other part of the position; namely, that women must not only menstruate, but must menstruate healthily and regularly, to ensure impregnation. Besides, a strong analogy is presented to us in the economy of brutes—the females of which have their periods of salacity; at this time they have a copious discharge from the vagina, which, without question, is of similar import with the menses of the human female—it is not a mere increased flow of the natural vaginal discharge; for we see it instantly detected by the discriminating olfactories of the male.

157. It may be asked, why are the menses in the human female coloured? It may be difficult to answer this question satisfactorily; but I am of opinion that one of its uses is, to advertise the female, when this discharge is arrested, that impregnation has most probably taken place; and thus enable her to make the necessary arrangements for the period of becoming a mother. Were this discharge not coloured, it might readily be mistaken for an increase of the secretion natural to the uterus and vagina—but being coloured, this error could not well take place.

CHAPTER V.

OF CONCEPTION.*

158. The ingenuity of physiologists has invented hundreds o hypotheses to account for impregnation in the human subject. The views of the supporters of these various notions may, however, be reduced to a few general heads:—1st. They may be divided into those who suppose the male semen to be directly conveyed to the ovaries, by being urged by the powers of the male apparatus through the neck of the uterus, into its cavity; and from thence to be transported by some inherent power of the

* We employ this term to signify, the successful application of the male semen to whatever is furnished by the female, for the continuation, or propagation of the species. Velpeau makes "the function of reproduction of the human species" consist, 1, Of *generation*, or the formation of the germ; 2. Of *fecundation*, or the vivification of the germ; 3. Of *conception*,* or the retention of the vivified germ; 4. Of *gestation* or *pregnancy*; 5. Of *parturition*, or the expulsion of the ovum.

* Velpeau defines conception to be that change which takes place between the instant of vivification and the period at which the germ shows evidence of development.

uterus to these bodies. 2d. Into those who supposed this ground not tenable; and who declared the semen is first absorbed from the vagina and carried, eventually, to the ovaries, through the medium of the circulation. 3d. Into those who believe the semen makes an impression upon the labia, vagina, or the uterus; and that impregnation takes place by the ovaria sympathizing with this impression. 4th. Into those who believe in the direct conveyance of the semen, after its being taken up from the labia pudendi or vagina by a set of vessels, whose whole duty is to convey it to the ovaries.

159. Against the first opinion it may be urged, that many well-attested instances have occurred, where it was impossible that the extremity of the male urethra could be placed in direct apposition to the os tincæ, so as to receive the male semen from it by a vis a tergo, (a sine qua non to this hypothesis,) 1st. Because of the entire occlusion, in some instances, of the os externum, by a too dense hymen, cicatrices, or the vagina terminating in the rectum; consequently, the penis could not enter it; yet impregnation has taken place under such conformations.* 2d. By the male urethra not terminating at the extremity of the glans penis, but beneath it, at the posterior extremity of the frænum: by the urethra being obstructed by strictures; by that canal terminating at the junction of the scrotum with the body of the penis; consequently, destroying the impetus the semen derived from the ejaculatory powers of the male organs, &c. We are aware, that it is objected to the cases just referred to, that they happened at a period in which much was taken for granted—or, at least, when the necessary attention was not paid to anatomical detail. To do away these objections, we insert two cases every

* The celebrated Louis mentions the case of a congenital imperfection of the external organs of generation in a certain young lady who menstruated per anum. She was demanded in marriage by a young man to whom she was attached. After much resistance, she confessed to him the secret. In the delirium of his passion, he supplicated her to consent to their union in the only practicable way; to which she consented; became pregnant, and was delivered of a well-formed child per anum.

Louis made this the subject of a thesis; for which he was prosecuted by the parliament of France; and the doctors of the Sorbonne interdicted him for addressing to the casuists the following question: "In uxore sic disposita, uti fas sit, vel non? judicant theologi morales?"

The pope, however, more philosophical than the parliament, or the Sorbonne doctors, gave absolution to Mons. Louis; and his thesis was published in 1754.—*Analysis of the article of "Extraordinary Cases," in the Dict. des Scien. Med. by Mons. Fournier.*

way and most amply in point, that fell under the notice of Professor F. Rossi.*

160. To the second it may be objected, that if the semen were absorbed by the lymphatics of the vagina, it would, like every other substance subjected to their influence, be changed; consequently, could not impregnate an ovum, as it is no longer pure semen. To this, it is true, it may be answered, that the very changes imposed upon the semen by the absorbents, may be essential to fecundation. But this would be flying in the face of the experiments of Spallanzini, who found that the semen *itself* was absolutely necessary to impregnation.

161. To the third we may say, it makes no provision for the formation of mules; for the peculiarities of, and likeness to parents; and for the propagation of predisposition to disease, from parent to child; for the production of mulattoes, &c.

162. The fourth we must leave to others to object to—I, many years since, promulgated this conjecture; and it has since been in part confirmed by the discovery of ducts leading from the ovary to the vagina, in the cow and sow, by Dr. Gartner of Copenhagen. This seems to be the most simple mode nature could adopt for the completion of her favourite object; but, I confess, it wants farther confirmation; and this I sincerely hope, is reserved to reward the industry of some American searcher into the minute anatomy of the human frame. I cannot but lament here the early death of the indefatigable and amiable Lawrance, who had intended to have made the search for these vessels one of his early occupations; and from talents and industry like his, what might we not have hoped for?

163. Modern pathological researches, have lately added a new species of impregnation to those of the uterine, ventral, ovarian, and tubal; to which the name of "Graviditas in uteri substantia, or interstitial pregnancy," has been given.

Sect. I.—*Graviditas in Uteri Substantia, or Graviditas Interstitialis.*

164. Dr. Breschet, an eminent physician of Paris, read a paper on the subject before the French Academy of Sciences; which has been reported on by the celebrated Geoffroy St. Hilaire; who has ventured an hypothesis on the manner in which this accident occurs, drawn from analogical observations made on oviparous

* See Lancet, vol. i. p. 385.

animals. We have no room for the insertion of these views; a notice of which may be seen in the Medico-Chirurgical Review, for October, 1826. The following is a summary, presented in the Bibliothèque Médicale, of the cases hitherto recorded.

165. A case published, in 1801, by Schmidt, in the sixth week of gestation.
1811, by Albers, at two months and a half.
1817, by Henderich, at three months.
1821, by Henderich, at eight months.
1823, by Bellemain, at three months.
1825, by Dance, at three months.
A case published in 1825, by Moulin, at two months and a half.
1825, by Auvity, at one month.

166. Messrs. Moreau and Gardien report a strange conformation of the uterus. "This uterus was well made, with the exception of its having a canal on the right Fallopian tube enclosed in the uterine parietes, and opening in the neck of this organ. This vicious conformation may explain the cases which have been witnessed of the development of the ovum in the uterine tissue."*

CHAPTER VI.

OF THE CHANGES PRODUCED BY CONCEPTION.

167. However philosophers may differ, as regards the mode of application of the male semen to the female ovary, they all agree that it is either directly or indirectly essential to impregnation. I shall now consider the changes produced upon the female organs after this event has taken place; and shall begin with those induced in the ovarium. After successful coition, an ovum is perceived to increase in size, and is seen to stand in more decided relief than before from the surface of the ovarium; and it is said, that this body now becomes more vascular. Arrangements are made, soon after, by the good offices of the absorbents for its liberation from its nidus;† accordingly, it becomes

* Revue Med. Vol. I. p. 507.

† Dr. Blundell makes the escape of the ovum from its nidus, a morbid or abnormal act: he makes its liberation depend upon ulceration. Now, we cannot for

exposed, by its peritoneal covering being destroyed by these vessels; and it is now ready to be embraced by the fimbriated extremity of a Fallopian tube, to be conveyed through its cavity, to the uterus.

168. The tube, at this time, is found in strict union with the ovarium; and is, in a short time more, found possessed of this little sphere. How it is detached from its bed, is not precisely understood; some say it falls into the cavity of the tube—others that it is mechanically forced into it, by the firm grasp of the tubal extremity, &c.: certain it is, it rarely fails getting into this canal, and made to travel by some power or other, its whole length; it is probably arrested at the uterine extremity for a short time after it arrives there, before it can effect a lodgement within the cavity of the womb.

169. Physiologists have not settled the point of time, at which the ovum loses its connexion with the ovarium; nor the period it employs in travelling to the uterus, or when it is admitted within its walls: analogy has furnished almost the only data that even conjecture can rest upon; and, in summing up the evidence it affords, it would seem to be about twenty days. A difficulty, however, has always presented itself to get the ovum into the cavity of the uterus after it has arrived at the extremity of the Fallopian tube. For it would seem, from the acknowledgments of almost all who have investigated this point in the human subject, that the Fallopian tube is sealed by the decidua passing over it; and that, consequently, the ovum must be placed behind it: the question then is, how does it overcome the difficulty, that this production offers to its immediate entrance into the cavity of the uterus? Before we attempt a solution of this question, it will be necessary to inquire, what this production is; how it is disposed of; and what are its uses.

170. It would appear, from the observations of those whose opportunities have led them to the investigation of this obscure part of human physiology, that the following fact constantly presents itself: that, so soon as impregnation takes place, and is

a moment believe that a process, so essential to the fulfilment of the design of man's existence, namely, to increase and multiply, can be performed by a pathological condition in an ovary; for, that ulceration may take place, it must be preceded by inflammation, and that of the portion of peritoneum that covers the ovarium; we all know too well what would follow from such a condition of this membrane, to suppose it can be in this pathological condition for the purpose spoken of.

perceived, if it may be so expressed, by the ovarium, the internal surface of the uterus throws out a vascular tissue,* through its whole extent, which, from its being after a time cast off, has received the name of membrana decidua: this was first accurately described by the late Dr. William Hunter. It is, I believe, well ascertained, that all that is necessary to induce the uterus to set about secreting this coat, is, that a vesicle be impregnated. And whether this escape from the ovarium or not, or tarries in the Fallopian tube, or loses itself in the cavity of the abdomen, it never fails to produce the decidua, and that very quickly. Some† have thought it to be a coagulable lymph, which soon became organized, by thousands of vessels shooting up through the whole extent of its surface; others‡ imagined it was a kind of continuation of the proper vessels of the uterus; and Mr. John Hunter believed it to be originally a coagulum of blood. Injections prove it to be highly vascular; and constant observation declares it to be deciduous; therefore it must be a temporary product; and certainly subservient to the uses of the embryo.

171. It is spread over the whole of the internal surface of the body and fundus of the uterus, but does not dip into its neck§—it forms, as it were, a bag within the uterus; sometimes we are

* Dr. Seiler declares, after a careful examination of thirty one healthy uteri, that the decidua vera is not a new product, but only a well developed and highly vascular condition of the lining membrane of the uterus; which acquires, when in a healthy state, a thickness of a line, or even a line and a half, in a state of disease, or, in aborted ova, becomes even thicker.—*Med. Chirur. Rev. Lond. for* 1833.

If any reliance can be placed upon the observation of Cassan, (Reserch. sur le cas d'Uterus double, &c., this statement of Seiler may be questioned. Cassan states, that in a case of double uterus, one was impregnated, while the other was lined by a closed bag of an organized *deciduous* membrane.

† Dr. Hunter, Scarpa, &c. ‡ Haller and others.

§ Velpeau declares the contrary of this, by saying, it is always found, "in the upper part of the cervix in the shape of *solid concrete cords;* and naturally, it has no opening." We think this account is rather obscure; and we are uncertain as regards the real meaning of the author. His expression is, (after stating it sometimes insinuates itself in the origin of the Fallopian tubes,) "et toujours dans la partie supérieure du col, sous la forme de *cordons, pleins, et concrets.*" We have used Dr. Meigs' translation of these words, ("cordons, pleins, et concrets,") because we could not render them differently—yet we are at a loss for the idea intended to be conveyed, as we have never observed, any "*solid concrete cords,*" in the many ova we have examined. The neck of the uterus is pretty constantly filled by a pretty dense coagulum, which has some resemblance to a "cord;" but this is not the same product as the decidua; for, when present in the neck, it is always below the decidua.

told* it does not stretch across the aperture formed by the neck; and sometimes,† it is said not to be continued over the mouths of the Fallopian tubes. Mr. Burns formerly, and Velpeau more recently, suppose that the decidua entered the mouths of the Fallopian tubes; but it must be evident, at first sight, that this arrangement would only unnecessarily obstruct the passage of the ovum through these bodies to the uterus. See Essays on various Subjects connected with Midwifery, by the Author, p. 62.

172. The uses of this new product cannot be mistaken: it certainly serves as a bond of union between the ovum and the uterus; and has, moreover, an indirect agency in the circulation between the mother and child.

173. It is described by Dr. Hunter, Dr. Hamilton, Mr. Burns, and others, as a double membrane; but as Mr. Burns is the latest of these authors, as he is extensively engaged in midwifery, and has, as he declares, had several opportunities of examining the uterus within a month after conception; and, above all, as he is the present authority for almost every thing relative to this subject, I shall give his account of the mode in which the ovum places itself behind the decidua, that it may finally descend into the cavity of the uterus. He says "when the embryo passes down through the tube, it is stopped, when it reaches the uterus, by the inner layer (of the decidua) which goes across the aperture of the tube, and thus would be prevented from falling into the cavity of the uterus, even were it quite loose and unattached. By the growth of the embryo, and the enlargement of the membranes, this membrane is distended and made to encroach upon the cavity of the uterus, or, more correctly speaking, it grows with the ovum. This distention or growth gradually increases, until at last the whole of the cavity of the uterus is filled up, and the protruded portion of the *inner layer of the decidua comes in contact with that portion of itself which remains attached to the outer layer.* We find, then, that the *inner layer is turned down and covers* the chorion: from which circumstance, it has been called the decidua reflexa."‡

* Burns, p. 193. † Sir E. Home, Phil. Trans.

‡ Velpeau§ describes this process differently, and we think by no means so satisfactorily, bating the error of Mr. Burns, that the decidua is a double membrane. He says, "The ovule, after passing through the tube, necessarily depresses the caduceous membrane, so that it may *glide on betwixt it and the uterus, to the internal surface of which it at last attaches itself:* from this moment the pre-existing membrane is composed of two portions; one very large, *lining the whole interior*

§ Elementary Treatise of Midwifery, translated by Dr. Meigs.

174. From this statement it would appear, 1st. That the decidua is a double membrane and capable of separation. 2d. That, in order that the ovum shall be placed behind the inner layer, it must pass through the outer layer; or, in other words, the outer layer must be pierced at either Fallopian tube. 3d. That the inner coat of the decidua, when pressed upon by the ovum, must increase in proportion to the augmentation of that body, that it may come "*in contact with that portion of itself, which remains attached to the outer layer*," or, in other words, to become reflected.

175. If this arrangement be admitted, it must necessarily follow, that the ovum will possess three layers of decidua instead of two; one more than has ever been detected, or ever insisted on. I have examined many ova, for the purpose of understanding their mechanism; and this with all the care, and all the little ability I have for minute dissection, and I can most safely add, without any previously conceived theory; yet I have never been able to find but two laminæ of decidua. If Mr. Burns' account were true, where is, or what becomes of the third layer? and that

of the womb, except the part which is in contact with the germ, bears the name of uterine or external *caduca;* the other very small, depressed by the lower half of the fecundated vesicle, which it envelops, constitutes the *reflected caduca*, *internal caduca*, or *epichorion*. The extent of the former augments in the same ratio with that of the womb, and the aggrandizement of the latter necessarily follows the growth of the germ." We have three objections, principally, to this arrangement. First, it speaks of the ovule gliding betwixt the decidua and the uterus. Now, this cannot be; for, agreeably to this scheme, whatever progress the "ovule" may make within the cavity of the uterus, can only be a mechanical force separating the decidua from the uterus; for Velpeau admits, that this membrane is very large, and lines the whole cavity of the uterus; consequently, before the ovule can "*glide*" betwixt it and the uterus, the decidua must be mechanically detached from the uterine surface—a work at least of supererogation, if not of violence. Now, Mr. Burns describes a more simple mechanism for this obscure process, by supposing the ovum to carry along with it, that portion of the decidua that is immediately before it; and which increases, pari passu, with the ovule itself, and eventually becomes reflected, by turning down upon itself. Secondly, it makes the ovule attach itself to the internal face of the uterus, and this without the intervention of the decidua, which cannot be—for, were this true, there would be no necessity for this production; since, agreeably to this plan, it does not become the bond of union between the ovum and the uterus. Thirdly, this account leaves out of view the offices of the chorion; for the "*reflected caduca, internal caduca*, or *epichorion*," do not represent the beautiful product this membrane furnishes, and which is essential to the union of the ovum with the deciduous efflorescence, that it may profit by a connexion with the system of the mother; but of this, no mention is made. In a word, nothing can be more obscure than the whole history of the human ovum as given by Velpeau—but this is not the place to point out its discrepancies.

it must have three, agreeably to his scheme, is evident: viz. two original layers, and an acquired one by reflection, by the increase of the ovum, as it pushes itself forward to "come in contact with that portion of itself which remains attached to the outer layer," "with which it grows."

176. It will farther follow from these premises: (173, &c.,) 1. That the process in question, as explained by Mr. Burns, is not exactly as he has stated it to be: or that, 2. The reflected portion must be absorbed, as quickly almost as formed; since it has never been observed. As regards ourselves, we confess that we have but little confidence in the history of the ovum as given by Mr. B.; and for this plain and simple reason—it does not comport with anatomical facts; a foundation upon which the whole must rest, to be satisfactory.

177. I have no faith in the statement, that the decidua is a double membrane; at least I have never seen it such; and of course, until I do, I shall admit it with great caution; especially as it does not appear necessary to the explanation of the process under consideration. 1st. Because a work of supererogation would be performed in making two layers, when one appears to be all that is necessary; and 2d. Because, if we believe it to be a single membrane the explanation is easy; and in entire conformity with the anatomy of the ovum, as presented to us by dissection. My opinion upon this subject, then, is easily expressed, by substituting a single membrane for a double one. To understand the union which now takes place between the ovum and this adventitious covering, it is necessary to say a few words on the subject of

Sect. I.—*The Membranes.*

178. Reasoning on the subject, I was of opinion, that the ovum brought its membranes with it from the ovarium; and I am now altogether convinced, by the late observations of Sir Everard Home, who detected them at a very early period of conception, by the aid of powerful glasses, assisted by the skill of Mr. Baur. These membranes are two in number: the inner one is called the amnion; and the outer one the chorion: they serve to enclose the embryon and the water in which it floats, even while it sojourns in the ovarium. After the escape of the ovum from thence, these membranes serve two other important ends: one is, to furnish by means of the amnion a quantity of fluid for the protection of the very tender molecule within; and the other by changes which

take place in the surface of the chorion, to connect it with the internal face of the uterus.

179. At first these membranes are not in immediate contact with each other;* having between them a jelly-like substance, which fills up the space that separates them; after awhile, however, owing to the increase of growth of the amnion, and a diminution of the gluten, they approximate each other so nearly, that they may be said to touch. The amnion is thin, transparent, smooth, and destitute of vessels, discoverable by the eye: it lines or lies below the chorion; spreads itself over the placenta; and invests the umbilical cord to the umbilicus—here it stops.

180. The chorion is also a thin, pretty transparent membrane; and is, at the full period of gestation, oftentimes sufficiently strong, to resist for a long time the impulses of labour. The precise anatomical structure of this membrane, is not perhaps altogether well understood at this moment—therefore much has been left to conjecture, as regards its more intimate composition. Some have assigned lymphatics, nerves, lymphatic exhalents, and inhalents, but we believe without sufficient authority. Indeed, it would seem that Velpeau† calls in question the existence, of the lymphatic exhalents and inhalents altogether, in the composition of any part of the animal structure; which, if admitted, would very much embarrass the doctrines of the physiological school, whether the human body be viewed in a normal or pathological condition. He says "these two last mentioned kind of vessels having been admitted in animal bodies, upon the say-so of the physiologists, especially Bichat, who never saw them, it is good philosophy to reject their existence without discussion, until they shall have been demonstrated by more conclusive proofs. The same may be said of the lymphatics, which the imagination of Schrægar and some others, seems to me to have detected on the chorion. As to nerves, I think I may say without offence to Chaussier, MM. Ribes, Home and Baur, that they are no more to be found there, than the exhalents, and lymphatics." We think, however, that this is rather a hasty, and uncandid denunciation; at least, as regards the exhalents, and perhaps the

* This circumstance, though admitted by almost all the writers on this subject, and confessedly curious, and almost necessarily important, has never, so far as we recollect, elicited a conjecture as to the probable intention of this arrangement. Is it to protect the feeble and delicate germ from impulse or shock, at this early and tender period of its existence?

† Dr. Meigs' Translation, p. 159.

lymphatics; as a useful purpose might be assigned for their existence, if we cannot imagine any utility in the presence of nerves in so insulated a membrane. It adheres very firmly to the placenta, and gives a covering to all its superficial vessels; it also accompanies the amnion, along the whole extent of the cord. Its outer surface, very quickly after its escape from the ovarium, is found to assume a cellular appearance, and presently, a flocculent one—it is this coat which furnishes from its external surface, the innumerable vessels by which it unites itself to the uterus by means of the decidua. When this union is effected, an interchange of offices takes place between the chorion and decidua; they reciprocally permit each other's vessels to repose themselves throughout their respective extents, by interlocking in such manner, as to establish a firm union between them. The extremities of the vessels of the chorion penetrate the interstices offered by the vessels of the decidua; while those of the latter seek refuge in the meshes of the chorion.* The union of the chorion with the decidua is so strict, especially after the second month, as always to bring it with it, in cases of abortion.

181. These membranes enclose, besides the embryo and placenta, a fluid called the liquor amnii—it would seem to be the

* Velpeau denies the vascularity of these filamentous productions: we are far from being satisfied that he is correct in making this denial. If we comprehend this author, the formation of the placenta is entirely independent of the decidua and chorion; a circumstance, to say the least, that wants proof. He says, "It is generally thought that the down that covers the chorion is of a vascular nature; but as early as 1823, I ventured to oppose this hypothesis. What proves that the filaments of the chorion are not vessels, is this, that they are to be seen before the blood vessels of the cord are recognisable. Besides, until the sixth week, every *flock (filament)* is at least as large as one of the umbilical vessels; so that, as there are only three of these, it is difficult for them to give birth to the others, which amount to several hundred. Now, we would ask any candid person, whether this amounts to more than a negative proof of what he wishes to establish; for it is not essential, perhaps, to the existence of these *filaments*, that the umbilical vessels be visible, as the chorion may have an independent power to form them. Besides, it is not absolutely necessary, for the formation of vessels, that the area from which these may be formed, be equal to the areas of the vessels proceeding from it. We have sufficient evidence of this in the division of the carotids, &c. Farther, these villosities are regularly spread over the whole of the periphery of the ovule, and are independent of each other, while the cord and placenta are only connected with one point of this vesicle." M. Velpeau seems to forget that this kind of arrangement exists in the fully developed placenta; for the cord is inserted but at one point of this mass; and it would puzzle him to show that the whole composition of this important organ is not vascular; and that the area of all this immense congeries of vessels, does not exceed the area of the vessels constituting the cord.

product of the amnion: in this the fœtus securely floats from its earliest existence, until the last period of utero-gestation. It seems to be but little more than water; having but a little gluten, and muriate of soda in it. It is sometimes transparent, like water; at other times it is yellow, brown, green, &c., and of various consistencies. Sometimes it is much more abundant than at others; from four ounces, to as many pints. The use of this fluid is to give a uniform distention to the uterus—to protect the fœtus against external injuries; and to afford it the most gentle and secure medium to repose in. Dr. Denman* says, it also "procures the most gentle, yet efficacious dilatation of the os uteri, and soft parts at the time of parturition." This opinion I shall have occasion to advert to.†

182. The ovum, after its establishment within the uterus, or after it is expelled by violence from it, consists of the decidua, the decidua reflexa, chorion, and amnion: of the liquor amnii, the fœtus, and umbilical cord; the latter has one extremity inserted into the umbilicus of the child; the other affixed to the membranes, which now constitute—

Sect. II.—*The Placenta.*

183. The placenta is that vascular mass by which the circulation is maintained between mother and child; and by which the latter is nourished. Its size is various, owing to the constitution of either mother or child, or both—it resembles in shape a large cake; it is in general nearly circular, thicker in the middle than at the edges. It presents two surfaces; namely, the uterine or maternal surface; and the fœtal surface. The former presents rather a rough and spongy appearance, traversed by several sulci of very inconsiderable depth; it is not unaptly compared in its appearance to the infractuosities of the brain; it is covered by a very fine cellular coat, but of such great delicacy, as to break upon the slightest bending of this mass. The eminences and sulci observed upon its maternal face, have been supposed to arise from a kind of necessity, for the greater security of attachment, by corresponding risings and sinkings, on the internal face of the uterus. I do not believe in this necessity, and suppose these sulci are the mere impressions of the maternal vessels, which are so much swelled beyond the plane of the common surface of the uterus, as to impress the placenta with furrows

* Introduction, Francis's ed. p. 219.

† See what is said, when we speak of the opening of the os uteri.

like the internal surface of the skull, by the vessels of the encephalon.

184. The internal surface is covered by the chorion and amnion, through whose coats may be perceived a beautiful display of vessels; sometimes they are found in fine regular order, like radii from a centre; at others running into fantastic irregularity: these vessels are both the arteries and veins, which tend to a common point, and when united form what is called the umbilical cord: in uniting to form this rope, they sometimes run parallel to each other for several inches; then twine round each other alternately until they arrive at the umbilicus of the child.* They

* Velpeau makes the twisted appearance of the cord to depend upon the movements of the fœtus; he says, "The reason of this twisted appearance, seems to me to be very plain: it depends on the rotatory movements of the child in the womb, and ten times out of twelve, it turns from left to right, according to my own and Meckel's observation. In some subjects *the cord is turned in one direction near the placenta*, and in the *opposite one near the child's belly;* most frequently it looks like a real rope, and hence, doubtless, is derived its name, *Cord.* Sometimes all three of the vessels turn on an ideal axis; at others the vein is twisted round the arteries, but in general, the arteries are twisted round the vein," p. 77. It is truly surprising that M. Velpeau should have offered such an unphilosophical explanation of the disposition of the umbilical vessels; especially as he is so skeptical upon certain physiological points, that are every way vastly more probable than the one in question—for instance, his doubts of the existence of serous or lymphatic vessels in the chorion; lymphatics themselves; blood vessels as belonging to the same membrane; the vascular nature of the spongy chorion; &c. &c. Now, as regards the cause of the twist in the umbilical vessels, his explanation is, we had like to have said, absurd, and he himself furnishes arguments enough to destroy it, without our having the trouble to furnish more. For instance—he says, that "the cord in some subjects is turned in one direction near the belly of the child, and in another, near the placenta." Now, a school-boy would laugh at any one, were he directed to twist his whip cord in one direction at one end, and in the opposite direction at the other, without some intervening remora; for the little rogue would know, that these contrary efforts to twist his string, would instantly destroy each other. Again; if the fact be admitted, that the cord is twisted by the gyrations of the child, why does not the twist unfold itself when one of its extremities is set at perfect liberty by cutting the funis?—Did M. Velpeau, or any body else, ever see the umbilical cord twirl itself in an opposite direction to the twist, upon becoming detached from the child or placenta. Again; were this the true explanation, why is the twist confined to the vessels constituting the cord, and the membranes covering them, not implicated by the same mechanical movements? Why are the membranous parts of the cord, without the slightest twist, when the vessels run parallel to each other, for some distance, nay, in some instances, for several inches together, while in the portions both above and below, the vessels that surround each other, as in ordinary? Does not the fact detailed by M. V. himself, seem to prove, that God has established some law, and for some wise purpose, upon this subject? or why should the direction of the vessels be "ten times out of twelve, from left to right?"

are connected through their whole extent by a fine cellular product, in the interstices of which we constantly find a tenacious, ropy fluid.

185. This cord consists almost always of two arteries and a vein: the vein conveying the blood to the fœtus, and the arteries conducting it from it; the veins of the placenta rarely have valves; while valves are frequently found in the arteries.* The arteries are continuations of the iliacs of the fœtus; they pass out at the umbilicus, and run to lose themselves in the substance of the placenta: they anastomose with each other within the meshes of this mass, as well as with some of the venal branches; this kind of communication is sufficiently extensive, to enable us to fill the whole plexus, by injecting one of the umbilical arteries; in like manner may the arteries be filled by injecting the vein. The vein originates by many branches in the substance of the placenta, and after a variety of unions, collects itself into one trunk, near where the arteries give off branches, the area of which is rather more than that of the two arteries.

186. This mass is subject to various affections, some of which, as sub-inflammation, dropsical infiltrations, and ossification, appear to be destructive to the fœtus; while others, as varicose affections of its superficial veins, and ossification of portions of its reticulated substance, do not appear to have any influence upon its health. Dr. Katerbau states, that "in the month of February, 1828, a woman was delivered of a healthy female child: she had complained, many weeks previous to her confinement, of a pain in the womb, and a feeling as if something within it pricked and cut her; for these sensations many remedies were

Were the spiral directions of the vessels of the cord contingent, why should they not be in equal, or nearly in equal, proportions to each other? Why should they be, "ten times out of twelve, from left to right? Can M. V. give us any explanation of the law that governs the motion of the child in this case, and which obliges it to gyrate from right to left, that it may twist the cord from left to right? &c. &c. Again; M. V. informs us immediately after, that it would be a mistake to suppose that the umbilical vessels never separate, because they do not generally do so. "Their division may take place at the distance of one, two, or four inches from the inner surface of the chorion, and even very near the abdomen of the child." In such cases, what has become of the gyrating influence of the child?—Had this existed, these are the very parts that would have first felt its effects.

* There are exceptions to the number of vessels that compose the cord. There are, in a preparation, in Dr. Blundell's collection, of a cord, consisting of a single artery and a vein. On the other hand, Blundell and Velpeau, describe a cord consisting of one artery and two veins.—*Dr. Ryan's Manual, 3d Ed. p. 72.*

administered without effect. After a tolerably speedy birth of the child, the placenta did not come away, and the midwife supposing it to adhere, proceeded to loosen it, which was easily done. During the operation the patient complained of violent pricking within the uterus."

187. "Upon inspecting the placenta," the Doctor remarks, "I found, throughout its substance, that numerous spicula of bone were interspersed, the whole of which resembled the points of ossification in a fœtal skull; they were firmly united to the integuments of the placenta, and in some parts, especially over the insertion of the cord, were arranged together so as to present somewhat of an arborescent appearance."*

188. We have seen a number of instances of similar partial ossifications of the placenta, but in none of which, did we perceive that this condition interfered with its usual economy.

Sect. III.—*Fœtal Circulation.*

189. There are five striking peculiarities in the sanguiferous system of the fœtus: 1st. The vena umbilicalis. 2d. The ductus venosus. 3d. The foramen ovale. 4th. The ductus arteriosus. 5th. The arteriæ umbilicales. 6th. To these we may add, that the blood itself is different from adult blood, in several particulars, agreeably to Fourcroy: first, its colouring matter is darker; it contains no fibrine, but, probably, a greater proportion of gelatine, nor does it possess phosporic acid.—*Ann. de Chirurg. tom. 7, p. 262.*

190. 1. The vena umbilicalis arises by very fine branches in the placenta. These branches are collected into one trunk, near the centre of the placenta; which trunk, forming a considerable part of the volume of the cord, enters behind the abdomen through the navel peritoneum, and running along the anterior margin of the suspensory ligament of the liver, empties into the left branch of the sinus of the vena portarum. While it is engaged in the anterior section of the umbilical fissure of the liver, it gives off several small branches to the substance of the liver. Nearly two-thirds of its blood is distributed to the liver, through the sinus of the vena portarum and the small branches.

191. 2. The ductus venosus arises from the left branch of the sinus of the vena portarum, and empties into the left hepatic vein, near the junction of the latter with the ascending vena cava abdominalis. The ductus venosus occupies the posterior section of

* Hufe'and and Osann's Journal, June, 1828.

the umbilical fissure, being much smaller than the vena umbilicalis, and arising from the sinus of the vena portarum, at its back part, directly in face of the entrance of the umbilical vein, so that a probe may be passed very readily from the one into the other.

192. 3. The foramen ovale is a large aperture between the two auricles of the heart, furnished with a valve on its left side, which is shut down the moment after respiration begins.

193. 4. The ductus arteriosus is a canal leading from the pulmonary artery into the aorta. It is so large as to appear like a continuation of the pulmonary artery, and discharges into the aorta at the lower part of its curvature, just after the origin of the left subclavian artery. The right and left pulmonary arteries, being at this time but very small branches, arise on each side of the ductus arteriosus.

194. 5. The arteriæ umbilicales are two in number, being continuations of the internal iliac arteries, which are here much larger than the external iliacs. The arteriæ umbilicales make a curve, running on the lateral parietes of the bladder, converge to the navel, and, passing through it, accompany the umbilical vein to the placenta. They twist spirally around it, and are distributed by very fine branches to the placenta, communicating with the extreme branches of the umbilical vein.

195. The course of the fœtal circulation is then, from the placenta through the umbilical vein and ductus venosus, into the ascending cava, whereby the blood is discharged into the right auricle of the heart. The position of the Eustachian valve is such as to turn the greater part of this column of blood into the left auricle through the foramen ovale. The left auricle may, therefore, be considered as distended with the blood of the ascending cava, while the right auricle is distended with the blood of the descending cava. The auricles contract at the same time, and fill the ventricles. The ventricles also contract together, and fill the pulmonary artery and the aorta. The size of the ductus arteriosus enables the right ventricle to discharge the greater part of its blood through it into the descending aorta. This blood is very impure. The blood passing through the foramen ovale to the left side of the heart, by being driven through the root of the aorta, is turned off to the head and upper extremities, through the arteria innominata, the left carotid and left subclavian; and what remains after this diversion, joins the blood of the ductus arteriosus in the descending aorta. A small portion of the blood of the descending aorta goes to the lower extremi-

ties, *but much the greater part circulates through the umbilical arteries to the placenta, where, after being vivified, it runs into the extreme branches of the umbilical vein*, and then repeats the same round until respiration begins.* For the most part, immediately on respiration occurring, the vena umbilicalis, the ductus venosus, the foramen ovale, the ductus arteriosus, and the arteriæ umbilicales, are closed, not to be again opened unless in very extraordinary cases.

Sect. IV.—*Of the Changes which take place in the Uterus from Impregnation.*

196. Hitherto I have been considering the changes induced upon the ovum by impregnation; it is now proper to notice those which take place in the parietes of the uterus itself. These changes commence on the internal surface of the uterus with those on the surface of the ovum; for no sooner is a vesicle fecundated, than the uterus has more than its usual quantum of blood sent to it; and this increases with the progress of gestation. The vessels, as already noticed, are very small, and very much convoluted before fecundation; now quickly enlarge, and become straighter—and this increase and development continues until they arrive at a very considerable magnitude; so much so, indeed, that some of the largest of these vessels, at the full period of utero-gestation, are capable of admitting the extremity of the little finger.

197. The fibres of which the uterus is chiefly composed, begin to develope themselves, so as to be recognised as muscular: they assume more distinct directions, and, though not susceptible perhaps of positive demonstration as to course, and form, are yet sufficiently palpable to deserve the name of muscular fibres. In consequence of this change, these fibres become longer and more lax; and admit, without restraint, the interposing and much enlarged vessels that traverse them in all directions, until the uterus itself is no longer capable of bearing farther distention with safety.

* Dr. Ryan, in his "Manual of Midwifery," p. 142, says, "Dr. Dewees is confused on this point; for he alleges that the blood discharged by the umbilical arteries passes into the umbilical vein, *and is there purified;* which cannot happen." Dr. R. has certainly read the passage marked by italics, without due attention—the reader will please to compare the above quotation with what I have really said.

198. This increase of size is by no means without its laws—on the contrary, the most perfect regularity and order are maintained, from the beginning to the end of gestation—so uniform is the progress of development, that the period of pregnancy can with considerable certainty be pointed out by the experienced accoucheur, by ascertaining the degree of distention the uterus has undergone, provided it be beyond the third month. Until this time, we are of opinion, that it would be hardly safe to hazard a positive opinion, especially in such cases in which it may be highly important to decide; and in which a decision may involve both life and character.

199. The position, as well as distention of the uterus, lead us to a knowledge of the advancement of pregnancy—for the first three, and sometimes at the fourth month, the uterus is found, in consequence of its weight, rather lower in the vagina than it usually is when not impregnated—after the fourth month, or at the end of the fifth, the fundus can be felt at the pubic region—at the sixth, half-way between it and the umbilicus—at the seventh, at the umbilicus—at the eighth, half-way between the umbilicus and the scrobiculus cordis—at the ninth, but very little higher, in a well formed pelvis. For at this time, there is a subsiding of the uterus within the pelvis, owing to the more frequently repeated, and stronger contractions of the body and fundus, and the now almost complete development of the neck of the uterus. It is not, however, the fundus and body alone, that suffer changes during the periods just stated; the neck, after the sixth month, participates in these alterations: it gradually becomes shorter and shorter, until after the eighth month; and, at the ninth, it is entirely obliterated.

200. The body and fundus first yield to the influence of the ovum; and they continue to expand until about the seventh month, or perhaps a little earlier. After this time, they seem to refuse to yield farther; the neck then is obliged to contribute its mite for the farther accommodation of the fœtus, and its appurtenances, which it does until the period of labour commences. At this time no trace of the neck is to be found: nothing remains of this pendulous part, but its orifice: which now, may be distinctly observed to be a little open.

201. The fundus and body of the uterus, not only yield before the neck, but some one part contributes more than another to the room necessary for the comfort of the fœtus; and these are the posterior portions—hence, they are found thicker, in the unim-

pregnated state; (121) and hence, the Fallopian tubes are always found, at the last period of pregnancy, in advance of the uterus: a fact of much importance in performing the Cæsarean section.

202. In proportion to the advancement of pregnancy, the uterus acquires a deeper tone of colour: this is owing solely to the augmented quantity of blood which it now possesses.

203. The power, by which the uterus is distended, has been disputed. Dr. Denman will not admit the agency of the ovum: he says, "It is evidently not mechanical from the increasing size of the ovum, but from the accession of a new principle; for the uterus is never fully upon the stretch, like a bladder inflated with air, but relaxed in such a manner as to be apparently capable of bearing the farther increase of the ovum without inconvenience."

204. We should be at a loss to comprehend this doctrine of Dr. Denman's, were we even to admit his proof. To say the uterus has acquired a new principle, does not do away the difficulty of understanding how it acquires size, unless something be positively added to this organ, at the time it gains the principle; for he must admit the uterus is enlarged; yet it is not distended like a bladder filled with air!—In what does the difference consist? There must be an increase of matter, as well as "an accession of a new principle," to prevent its being distended like "a bladder filled with air," or it must be stretched like one.—If it be declared there is an increase of matter, we would ask for the evidence; as well as inquire what becomes of it, immediately after delivery?*

* I am happy to avail myself of the opinion of the judicious and experienced Dr. Ramsbotham, upon this subject. He says, that "there is no actual deposition of new animal matter within the uterine structure during pregnancy, appears to me evident in the established fact, that the uterus, by a process of silent and gradual contraction, continued for some time after the expulsion of its contents, can and does possess the power of daily diminishing its volume, until it has acquired its smallest unimpregnated size; when it is again able to resume its original and peculiar functions. But if the parietes of the gravid uterus be supposed to owe their size to bulk, acquired by the deposition of new animal matter, by what natural means is that matter so suddenly removed? Can the effects of absorption be thought equal to it? We see no such rapid diminution of size from the powers of the absorbent system under diseased structure. Contraction alone explains it."—*Pract. Obs. Am. ed. p.* 26.

Dr. Blundell suggests, that "it is, perhaps, in good measure, in consequence of the absorbents being large, numerous, and active, that the uterus, after delivery, shrinks so rapidly."—*Prin. and Prac. of Obstet. p.* 79.

205. I am of opinion that, were the bladder circumstanced precisely like the uterus, or the uterus like the bladder, the same phenomena would present themselves; that is, let the uterus be deprived of its adventitious blood, as would happen after severe hemorrhage, and it would be found as thin nearly, or perhaps quite, as the bladder, all things being equal: or let the muscular fibres of the bladder be separated by as many, and as large vessels as those of the uterus, and it would be as thick as the uterus when in a state of distention; for we must deny that the uterine parietes, when freed from all their blood, are as thick as they were when unimpregnated.

206. Dr. Denman denies that the uterus is ever in a state of "full distention." I do not know what he would wish us to understand by "full distention:" if he mean, that it is still capable, under extreme pressure, of yielding farther, I should agree with him, that it is still capable of greater distention; but if he mean, that it is never as much distended, as is compatible with either its economy or comfort, at the full period of utero-gestation, I would certainly deny, and would seek for no other proof, than the well known fact, that, after the seventh month, it is constantly found resisting farther encroachments, by being excited to regular and constant contractions, as may be distinctly perceived by the introduction of the finger into the os uteri. Besides, did we not admit this resistance to farther distention on the part of the body and fundus, how shall we ever explain the unfolding of the neck of the uterus at the period just indicated? Now, if it be distended at the ultimate period of pregnancy, to the point of resistance, would it not seem to be a rational and natural deduction, that it had proceeded to "full distention," or at least, as far as was compatible with its economy, or even with the integrity of its organization?

207. We may also urge in favour of the ovum having an agency by its growth in the distention of the uterus, that, if the liquor amnii be discharged, the uterus will collapse immediately, and accommodate its parietes to the form and size of the remaining contents. Could this be, did the uterus acquire its additional bulk during pregnancy, from an increment of new animal matter? If this additional matter really did exist, it would doubtless be of serious mischief in cases of flooding; as it must necessarily interrupt contraction.

CHAPTER VII.

OF THE DEVELOPMENT OF THE FŒTUS.

208. A strong and certainly a laudable curiosity is almost always felt by the student, to ascertain the progress of development of the fœtus from the moment of its conception, up to the full term of gestation. And, though our knowledge upon this subject must necessarily be both limited and uncertain, yet enough is known to enable us to form a tolerably correct estimate of the progress the embryo or fœtus makes, up to its final development.

209. The latest information upon this subject will almost necessarily be the best; as all that is known upon this head, must consist of a series of histories by different naturalists, anatomists, &c.; we shall, therefore, avail ourselves of the accuracy and industry of Dr. Beck* upon this point; and, at the same time, tender that gentleman our thanks for this, and several other pieces of valuable information connected with several of our subjects.

210. Dr. Beck says, "I will premise, that the following summary is drawn from the observations of Aristotle, Hippocrates, Riolan, Haller, Rœderer, Meckel, Burton, Baudelocque, William Hunter, Burns, Chaussier, Beclard, Capuron, Clarke, Merriman, and Sœmmering.

211. "From the time of the first evidence of impregnation to the fifteenth day, the produce of conception appears only as a gelatinous, semitransparent, flocculent mass, of a grayish colour, liquifying promptly, and presenting no distinct formation, even by the aid of a microscope. At thirty days, it has the size of a large ant, according to Aristotle, or of a barley-corn, according to Burton. Baudelocque, however, observes, that it is not larger than the malleus of the tympanum. Its length varies from three to five lines. At six or seven weeks, its length is almost ten lines. The form and lineaments of the principal organs, and the place from which the members are to arise, can now be observed, and it is equal in size to a small bee. At this time also, the fluid contained in the membranes is much heavier than the embryo. At two months, the length is about two inches, and its weight

* Elements of Medical Jurisprudence, vol. I. p. 162.

nearly two ounces. All the parts are perfectly distinct, and many points of ossification are observed in the head, trunk, and members. Sometimes the male sex may be distinguished. At the third month, it is about three and a half inches long, and between two and three ounces in weight. The nose and mouth are formed, and the features of the face become more distinct. The eyes are shut, and the eyelids adhere together—the head is longer and heavier than the rest of the body—the umbilical cord is formed—the genitals are distinct—the penis, &c., are relatively very large—the nymphæ are projecting, and the labia very thick. At the fourth month, the fœtus is from five to six inches long, and weighs from four to five ounces. The external parts all develope themselves, with the exception of the hair and nails. The great relative proportion of the fluid of the membranes disappears, and the fœtus nearly fills the cavity of the uterus. During the fifth month, the motions of the fœtus are felt by the mother. The length is from seven to nine inches, and the weight nine or ten ounces. The brain is pulpy, and is destitute of circumvolutions or furrows. The external ear is completed about this time, though its shape, which is like that of a gently depressed circle, differs from the ear after birth.

212. "In the sixth month, we begin to find some trace of fat under the integuments, where previously nothing but a mass of gelatine had been observed. The head, also, which before had been proportionably large, becomes smaller in comparison with the body. It is now, however, large and soft, and the fontanelles are very much expanded. The brain acquires more consistence, but is still easily dissolved; and the pia mater seems only to lie over its surface, being separated with great facility. The skin is very fine, pliant, and thin, and of a purple colour, especially in the palms of the hands, the soles of the feet, the face, lips, ears, and breasts. In males the scrotum is slightly developed, and of a bright red colour; and the testicles are still in the abdomen. In females the vulva is projecting, and the labia separated by the protuberance of the clitoris. The hair on the head is very thinly disposed, short, and of a white or silvery colour—the eyelids are closed; the hair on the eyebrows and eyelashes but thinly scattered, and the pupil is closed by a membrane. The nails are wanting, or scarcely apparent. The lungs are very small, white, and compact. The heart is large, and the liver very large, and situated near the umbilicus—the gall bladder contains only a small quantity of a nearly colourless fluid; and the meconium is

small in quantity, and is found only in a part of the large intestines. The bladder is hard and pyriform, and has a very small cavity. The ordinary weight of the fœtus, at this time, is from one to two pounds; and its length from nine to twelve inches, the middle of which is at the abdominal extremity of the sternum."

213. "At the seventh month, all the parts, both external and internal, are still more developed. The skin assumes a rosy hue, and becomes more dense; and it is covered with a sebaceous fluid, so as to form a whitish, unctuous covering. The eyelids are no longer united, and the membrana pupillaris separates, so as to form the pupil. The cerebral pulp becomes more consistent, and its surface is a little furrowed, and adheres somewhat to the meninges. The meconium increases in quantity—the hair on the head is longer, and takes a deeper hue. The nails acquire more firmness. Weight from two to three pounds. Length from twelve to fourteen inches—the middle of which is nearer to the sternum than to the navel.

214. "At the eighth month, the skin has acquired more density, and is whiter; it is covered with very fine white hairs, and its sebaceous covering is more apparent. The nails are firmer; the hair of the head longer, and more coloured. The breasts are often projecting, and a lactiferous fluid may be pressed from them. The testicles in males are frequently engaged in the abdominal ring. In females the vagina is covered with a transparent mucus. The grooves in the cerebral substance gradually become more marked; the spinal marrow, pons varolii, and medulla oblongata, acquire a remarkable consistence, and even firmness. The lungs are of a reddish colour; the liver preserves nearly its former relative size, but it is more remote from the navel; the fluid in the gall bladder is of a yellowish colour, and has a bitter taste. The weight, at this time, is from three to four, and sometimes five pounds. Length, sixteen inches or more—the middle of which is nearer to the navel than to the sternum.

215. "At the ninth month, ossification is more complete—the head is large, but it has a considerable degree of firmness. The bones of the cranium, though moveable, touch each other with their membranous margins; the fontanelles are smaller; the hair is longer, thicker and of a darker colour; and the nails become more solid and prolonged to the extremity of the fingers. The convolutions on the surface of the brain are more numerous—the cineritious portions begin to be distinguished by their colour;

and though the lobes which compose the cerebrum retain their former softness, yet the cerebellum, and the basis of the cerebrum, have acquired a remarkable consistence. The head measures longitudinally, from the forehead to the occiput, four inches, to four inches and a quarter; and transversely, from three and a half to four inches. The abdomen is now large and round. The lungs are redder and larger. The canalis arteriosus is large, and its coats are thicker and denser than formerly. The meconium fills nearly the whole of the intestines, and the bladder contains urine. In fact, the digestive apparatus, the heart, and the lungs, are in a state fit to commence extra-uterine life. The length varies from nineteen to twenty inches or more—the middle of which is at the navel, or a very little below."

216. The detail of the progress of development just given must, however, be looked upon but as a general scheme, to which many exceptions will necessarily present themselves, nor can a nearer approach be well made; since almost every country will present individual differences; especially in the weights and measurements of the embryo and the fœtus; consequently, the estimates here given, must not be regarded as rigidly exact. Indeed, our individual experience, were it compared with many of these statements, would be at variance with them; but not so extensively as to invalidate the general estimate.

217. Nothing, perhaps, will place these observations in a clearer light, than giving the standard average weights of the newly born fœtus in different countries, as has been collected with so much industry by Dr. Beck, and whose account we will make use of.

218. "The weight of the fœtus, at the full time of utero-gestation, has been the subject of numerous observations; and, as a preliminary remark, it must be noticed, that this differs according to the conformation and habits of the parent, and the sex of the child. Healthy females, residing in the country, or engaged in active occupations, have generally the largest children. Male children, also, generally weigh more than female ones.

219. "In Germany, Rœderer found the weight, in one hundred and thirteen cases, to vary from seven to eight pounds; and he lays it down as a rule, that it is rarely less than six pounds. Dr. Hunter states, that Dr. Macauley examined the bodies of several thousand new-born and perfect children, at the British lying-in Hospital, and found that the weight of the smallest was about four pounds, and the largest eleven pounds

two ounces; but by far the greatest number was from five to eight pounds. Dr. Joseph Clarke's inquiries furnish similar results.

220. The greatest proportion of both sexes, according to him, weighed seven pounds; yet there were more males than females found above, and more females than males below that standard. Thus, out of sixty males and sixty females, thirty-two of the former, and twenty-five of the latter, weighed seven pounds, and there were fourteen females, and only six males, who weighed six pounds. On the other hand, there were sixteen males, but only eight females who weighed eight pounds.

221. "Taking, then, the average weight of both sexes, it will be found that twelve males are as heavy as thirteen females. The exact average weight of male children, according to Dr. Clarke, was seven pounds five ounces and seven drachms; and that of female, six pounds eleven ounces and six drachms."

222. "Dr. Clark of Dublin, found the weight to vary from four to eleven pounds. Dr. Merriman states in his Lectures, that he delivered one that weighed fourteen pounds, (it was born dead,) and Dr. Croft delivered one alive, weighing fifteen pounds.*

223. "In France, the weight seems to be less than in England. Of 1554 examined by Camus, the greatest weight was

* From these remarks it would seem, that it is very rare in Europe, at least in British Europe, to meet with children weighing more than twelve pounds. In this country, as far as our experience goes, it is not very unfrequently met with, if comparisons by the eye do not greatly deceive us. I delivered one woman of three children, (at three different births, and all males,) which appeared of the same size at birth; and from the very large size of the one I first delivered her of, I prevailed upon the parents to permit me to weigh it—it weighed, without clothing, fifteen pounds and a half—the two others were not weighed, but appeared to be of equal bulk. I have met with two ascertained cases of fifteen pounds, and several I believed to be of equal weight. I will give the measurements of a child at birth, the weight of which was not ascertained, from prejudices being entertained against the experiment. This child, (a male,) was delivered alive by the forceps; as was its brother, eighteen months before; and which, I believe, was of equal size.

Round the forehead and vertex, 16 inches 4-8ths.
Round the shoulders, 19 inches 5-8ths.
Round the arm below the elbow, 5 inches 6-8ths.

Velpeau says, that a new-born child of eight or nine pounds, is enormous; and indirectly calls in question the veracity of those who affirmed they have witnessed much greater weights—did M. V. live in this country, he might often be convinced that such things do occur, and that not so unfrequently, as to make them extremely rare.

nine pounds; and of this there were sixteen instances; the ordinary from five to seven, and the average, six pounds and about a quarter. There were thirty-one instances in which the weight was as low as three pounds. Baudelocque, however, states that he saw several instances in which the weight was about ten pounds, a few where it was twelve, and one of thirteen. Subsequent observations on twenty thousand children at l'Hospice de la Màternité in Paris, have shown a few instances where it has been one hundred and sixty-eight ounces; that is, ten pounds and a half; and this is the highest term. Capuron mentions, that he has seen two instances where the children weighed twelve pounds.

224. "We shall, as a deduction from the above observations, be probably most correct in allowing the average to vary from five to eight pounds. Dr. Willoughby* informs us, that as far as his observations have extended, the average weight of children is upwards of seven pounds," p. 167, &c. The result of Dr. W's. experience would, we believe, accord with our own.

225. "The length of the fœtus, at full time, varies much less than its weight. Rœderer concludes, from his examinations, that the average length of a male child, is twenty inches and a third, while that of a female is nineteen inches and seventeen-eighteenths. Petit assigns twenty-one inches as the usual length. Hutchinson says, it is ordinarily from nineteen to twenty-two inches, and seventeen and twenty-six inches will include the two extremes,† excepting some very rare cases, while Foderé and Capuron place the extremes from sixteen to twenty-three inches. This last author attaches great importance to the difference in the proportion between the length of the superior and the inferior parts of the body, and he conceives that attention to this, is one of the best modes of verifying the age of the fœtus. As a general rule, there will be an equilibrium between the upper and lower parts of the body at the ordinary term of gestation, and the navel will be at the middle of the body, or nearly so. Before that time, the middle will approach nearer the head.

226. "It is evident, that the signs drawn from the structure, weight, and dimensions of the child, are liable to some variety, and this depends on various circumstances, such as the age and vigour of the mother, her mode of life, the diseases to which she

* Professor of Midwifery at the College of Physicians and Surgeons of the Western District of New York.

† I once delivered a child, that measured twenty-seven inches in length.

may have been subject, and probably the climate in which she lives." p. 170.

227. From what has been said, it must be certain, that the fœtus, like every other product, will be liable to a variety of contingencies in its progress from the germinal, to the fully expanded state; and, consequently, that the laws of development may be imperfectly, or irregularly, too slowly, or too rapidly performed, which will, as one or the other of these conditions prevail, give rise to a considerable difference in the appearance of the newly born child.

228. If the laws of development be imperfectly or irregularly performed, the foetus may be defective in some of its parts; or it may be natural, or excessive in other portions of its body. If too slowly developed, it will exhibit the marks of immaturity, but not (perhaps necessarily,) of imperfection. If this be too rapidly performed, there will be evidences of it, in the excessive though perfect size of all its members. In a medico-legal point of view, it is sometimes of great consequence to decide between immaturity of development, and the imperfection of development of the fœtus; the first has relation to the time it may have tarried in the uterus; while the second depends upon the manner in which development has proceeded, or has been performed in utero. These two conditions of the fœtus, it will be easily perceived, may have a very important influence in certain cases, as one or other may exist. On the one hand, when development is performed too rapidly, or excessively, it may give rise to very important consequences, as we shall attempt to show presently.

229. While, on the other, the instances of retarded development are by no means uncommon; and when this occurs, it may occasion much error of deduction; especially, when this is based upon the mere appearance of the child. In some instances it may involve the happiness and character of the individuals with whom this deficiency of organic power may prevail; it, therefore, merits serious attention. And again, causes may operate to hasten, or rather to augment development. So much so is this the case, sometimes, as to lead to conclusions equally disastrous to the reputation and happiness of the individuals concerned, in the event of its becoming a medico-legal question. We shall cite an example of each kind.

230. One of the most remarkable of the first kind, is that related in the "Clinique d'Accouchemens de Pavie," reported by

Dr. Lovate.* This case is recorded as an instance of premature delivery at the fifth month, though the woman believed herself to have arrived at full term. The reporter declares, that "every appearance announced the opinion of the woman to be correct; this was her sixth pregnancy; and she had been, previously to impregnation, perfectly regular in her catamenial discharges. Eight menstrual periods had passed without any discharge; the abdomen swelled progressively and regularly; the child was felt for several months; the neck of the uterus was very short, and the lower segment of the uterine cavity was much developed; the head of the fœtus was easily felt, but was very moveable. The uterus reached to the epigastric region; and the abdomen was very voluminous. On the 28th November, 1824, this woman was delivered naturally of a living, but a feeble child, and appeared not to be more than five months; it lived some hours. It weighed two pounds ten ounces, measured thirteen inches and nine lines, and there was a great disproportion in length between the inferior and superior parts, from about the umbilicus. The waters weighed more than ten pounds, and escaped with the dependencies of the fœtus." This extraordinary accumulation of the liquor amnii, is considered as the cause of the error of the period of gestation, and of the premature birth of the child.

231. Though the reporter of this case looks upon the great quantity of water as the cause of error in the woman's calculation of her advancement in pregnancy, as well as the cause of the premature delivery, (as he thinks it;) yet the history of the case appears to afford the strongest ground for the belief, that the woman went her full time; and that the under size and weight of the child was owing to its incomplete development. In the first place, eight menstrual periods had elapsed without discharges, before the birth of the fœtus; and this took place with a woman, who had been perfectly regular before. Now, though we do not hold this circumstance in itself to be conclusive, yet it must be looked upon as strongly presumptive, that the arrest of the catamenia was owing to impregnation; as the abdomen began to enlarge regularly from this time; and the stirrings of the child were perceived several months. If we add to these facts, the condition of the neck of the uterus, the ascent of its fundus to the epigastrium, and the facility with which the head of the child was felt, they would seem to be conclusive, that the woman had gone to the full period of utero-gestation. Besides, the weight

* Révue Médicale, Vol. III.

and measurement of the child vastly exceeded those of a fœtus of but five months.

232. In general, a fœtus at five months measures, agreeably to Hamilton, and our own frequent observation, not more than from six to seven inches,* and weighs but a few ounces; whereas, in the case in question the fœtus measured double this number of inches, and weighed more than six times the ordinary weight of one at five months. Besides, it is expressly stated that the mother felt the stirrings of the child during several months previously to its birth. Now, the common period of quickening is about the fourth month. It is true, that this circumstance, if taken alone, might be liable to some objection; as women have declared they have perceived this sensation as early as the twelfth week; but if the regular development of the uterus be taken into consideration, (and it is declared, that at the time of delivery, its fundus had reached the epigastrium,) it justly acquires much, and deserved weight.

233. The author of the observation is of opinon, as we have stated, that the extraordinary accumulation of waters was the cause of the error in the calculation of the period of gestation, as well as what he supposes the premature expulsion of the fœtus; but we cannot agree with him in his conclusions for the following reasons: 1st, Because it is stated that after the cessation of the menstrual discharge, the belly increased "progressively and regularly;" and consequently, if this enlargement depended, as is supposed, upon liquor amnii being enclosed within the uterus, the liquor amnii must have existed before conception had taken place; a circumstance, hitherto, we are disposed to believe, which has never been insisted on. 2d. Because this explanation supposes that the liquor amnii can be furnished independently of the amnios; for if the uterus was regularly developed, as it is declared to have been from the first stoppage of the catamenia; and if this development was occasioned by the liquor amnii, that fluid must have been produced by the covering of the fœtus; and if this be admitted, the fœtus, must have existed as early as the liquor amnii; and if this be granted, it must date its age from the time the menses were interrupted, which will make it a child at full period; but one which had been imperfectly developed. 3d. Because it is a very common occurrence, to have a large collection of the

* Dr. Beck says, (211,) the length is from seven to nine, and weight nine or ten ounces; we are certain that both the measurement and weight are excessive as a general rule.

liquor amnii, when the fœtus is but ill developed, where there is no suspicion that the woman has not arrived at full time. 4th. Because, in the case in question, there was no preternatural distention of the uterus, to render it probable, that it was developed in so short a period as five months, to a size equal to that at the last period of gestation, from the mere excess of the liquor amnii, as the united weights of the fœtus, (2 lbs. 10 oz.) and of the waters, (10 lbs.) will not exceed the average weights of these two substances at the ordinary full period of gestation.

234. It may be said that the liquor amnii was so largely and suddenly furnished as to give the uterine development the appearance of maturity; though the woman may have been but five months impregnated: but this supposition is entirely destroyed by the facts connected with the first interruption of the menses; for it is expressly stated, that the belly began to swell "regularly and progressively," and that "the neck of the uterus was very short," and "that the lower segment of its cavity was much developed." Besides, we must insist, that there is no example, in our opinion, extant, of a fœtus of five months weighing two pounds ten ounces. Again; the woman herself was of opinion, that she had arrived at her full time; and her impression on this subject is certainly entitled to some consideration, as she had had five children before, and could not very well be mistaken when she said she had felt her child several months before the period of labour.

235. I would inquire, moreover, whether any accoucheur could easily feel the head of a fœtus by an examination per vaginam, at the fifth month of pregnancy. Indeed, at this period it is not always safe to declare the woman to be pregnant, much less to determine, that the head is the presenting part, and that it is very moveable; for as the neck of the uterus has lost nothing of its length, at this time, and as the uterine parietes are very rigid and pretty thick about this period, we are of opinion that much difficulty would attend forming a decision that would be free from all error. As regards ourselves, we have no hesitation to believe this case to be one of retarded or imperfect development of the fœtus; and that its application to medico-legal investigations may be highly important.

236. We have stated above, that the development of the fœtus may be more rapid and perfect than ordinary, as well as unusually defective; and when this takes place, it may also give rise to very serious consequences, if the possibility of such an occur-

rence become a question, before a legal tribunal. As we are of opinion that this pretty frequently happens, we will relate a case, which had nearly become a subject of inquiry, before one of our courts, by a suit for a divorce.

237. In November, 1810, I was called to attend a female in labour with her first child. The woman had been very suddenly attacked with severe pains, in consequence, as was supposed, of great agitation of mind. On examination, I found the uterus was not completely developed; as a portion of the neck was still to be felt. I inquired of the patient, whether she thought herself at her full period; she answered, no; she was but seven months gone.—After several hours of very severe suffering, she was delivered of a large boy; at least, large for seven months. I, however, made no observations upon the case at the moment, as I was an entire stranger to the circumstances of my patient: though the size of the child was remarked by an old woman, mother of the husband, who said, it was "the finest seven months' child she had ever seen." It is certain, the child bore every mark of greater maturity than is usual with children born at the seventh month of utero-gestation.

238. Some months after this period, I was called upon and examined before a magistrate and two lawyers; this was a preliminary step to a suit for divorce, which was intended should be sued for by the husband of my patient, if certain opinions derived from me, were favourable to such an undertaking.

239. The following circumstances were alleged on the part of the intended prosecution, before the magistrate and the two lawyers: 1st. That at the period of the birth of the child, but seven months had elapsed, since the marriage of the parties. 2d. That at the time of the marriage, the husband had been from sea but two days, and this after an absence of some months. 3d. That at the end of seven months the wife was delivered of a full-grown child.* It was therefore declared, that the woman was pregnant before marriage, and that, not by her husband; a bill of divorce was therefore intended to be prayed for.

240. On the part of the wife it was proved, she had sustained an irreproachable character; that she was an industrious, domestic woman; not visited by, or known to associate with any man in particular; that she had during the whole time lived with the

* It was stated, that after I had left the house, it was suggested by some one present, that it might be well to weigh the child: this was done; and it was ascertained to weigh between six and seven pounds.

mother of her husband, and that she had had her menstrual period but a few days before her marriage, and that she had not had them since her marriage.

241. My evidence went to say, that at the period of labour, the neck of the uterus was developed rather more than was usual at the seventh month, but was not effaced; which gave rise, on my part, to the question, as above stated, whether the patient thought herself at her full term, and which drew from her the answer, that she was "but seven months advanced in her pregnancy;" and that my opinion and belief was, that she was not in error as regarded her calculation; though the child was very considerably larger than is usual at the seventh month. That violent mental excitement was a frequent cause of abortion, and of premature delivery; and it had been proved, that this woman had experienced great mental anxiety, as well as felt great anger, the day previous to her experiencing any thing like the pains of labour; and that this mental agitation might have occasioned the premature delivery.

242. That the development of the fœtus is by no means regular; that it is notorious, that some women bear much larger children than others; that the average weight of a newly born child is fixed in this country, at between seven and eight pounds. Now, it must be evident, from an average being fixed upon, that there must necessarily be many children whose weights must exceed the stipulated weight or average; and many others fall below it. And though it was my belief, that the weight of the child in question, was nearly equal to the average proportion; yet that this, in itself, did not by any means prove it had arrived at full time; as, all such children whose respective weights may exceed the average, and particularly those which may weigh from twelve to fifteen pounds at birth, (a thing not very unusual,) must necessarily have weighed more than the average at seven months; and, consequently, the weight of the child cannot mark the period of gestation with so much precision, as to render it free from all error.

243. That the fact just stated, must strike every body as an irresistible truth; and, consequently, that this might have happened in the case in question; or, in other words, as it is indisputable, that many children at birth exceed the average weight, it must follow, that the less weight must be attained before the greater; and that in cases of excessively heavy children, six or seven pounds would not be an extravagant weight for a child

at seven months, that might weigh nearly double, if carried to the full period of utero gestation; and, that there could be no possible reason assigned, why this might not have happened, in the case in question.

244. The husband was so entirely satisfied of this possibility, that he abandoned all farther intention of a prosecution.

245. A diseased condition of the mother may sometimes interrupt the regular development of the fœtus; but this is by no means so frequent as might at first sight be imagined, even where this might reasonably be expected. For in cases of long-protracted illness, where the mother has suffered great emaciation, the child has often been found, contrary to all expectation, well developed, and apparently healthy. Yet it now and then occurs, that the increase of the fœtus has not kept pace with the period of utero-gestation. An instance of this kind fell under my own observation; and in which there could be no possible error in the calculation, if any reliance can be put upon human asseveration. Mrs. —— was taken in labour at the end of the seventh month of gestation, and was speedily delivered of a fœtus of about five inches in length, and might probably have weighed three ounces; it breathed very imperfectly a few minutes, and then died.

246. Upon my declaring to my patient, that she had made a great mistake in her calculation, as the child could not at farthest be more than five months, she said it was impossible, from circumstances, that any error could exist; and, that she was every way certain it must be full seven months. Presuming what might be the "circumstances" alluded to, I inquired of the husband, whether my conjecture relative to them, (namely, that no intercourse had taken place for that length of time,) were correct: he assured me they were; as the health of his wife had so rapidly declined at about that time, as to prevent any union from taking place.

247. Again, we are intimately acquainted with a lady, (whom we have delivered of nine children at full term,) who never has produced a child that would have weighed, at birth, five pounds. Yet this lady enjoyed an uninterrupted state of health; made an excellent nurse; and at the end of a year her children were as large and as healthy as children usually are at this period. This lady was subject to no disease during gestation: she did not even suffer the usual penalties of pregnancy; for she was exempt from both nausea and vomiting.

248. In treating of subjects, which have a relation to medical jurisprudence, it may be thought, by some, I have rather wandered from the strict path which my professed object points out. But in this I do not agree. First, Because I do not meddle with any subject of a medico-legal kind, that has not an intimate, and perhaps entire connexion with midwifery. Second. Because on the intimate knowledge of this branch, some of the most important testimony almost exclusively depends. Third. Because some of the most frequent, as well as interesting objects of medical jurisprudence, as infanticide, supposed pregnancy, supposed delivery, rape, &c., are dependent, almost altogether, upon the evidence of the accoucheur. Fourth. Because there are points in each of the cases just named, which can only be elucidated by the experienced practitioner of midwifery. Fifth. Because there is much ignorance as well as discrepancy betrayed in the testimony of physicians, who may practise, (and even extensively,) this branch, when called into a court of justice, from the want of the knowledge of the subjects, at which we have rather glanced, than professedly treated.

249. Besides, in doing this, I hoped to awaken an interest to the subject of medical jurisprudence in those (and they are by very far the greater number,) who have hitherto paid no attention to the subject, by bringing before them quotations from Dr. Beck's admirable work on this subject, and thus induce them to possess themselves of it.

CHAPTER VIII.

OF THE ACTION OF THE UTERUS.

250. The uterus exerts two kinds of action: first, that action which tends to reduce itself to its original size after having been distended, and the distending cause has been removed; this is called by Baudelocque and others, the tonic action of the uterus. This action is performed by all the fibres of this organ gathering themselves up towards a common centre; but more especially, by that class of fibres we shall denominate the "circular fibres;" the other fibres are those we shall call the longitudinal, not act-

ing with a force equal to the other; hence the lengthened form of the uterus.

251. The tonic action of the uterus can be exerted in various degrees, as it may possess its inherent powers in a greater or less state of perfection; it may exist under the following conditions, and varieties: 1st. It may act with the most perfect uniformity and success for the purposes for which it is intended. 2d. It may be impaired so as to act transitorily and feebly. 3d. It may act with force at one moment, and cease the next. 4th. It may act partially; that is, the fundus may contract, and the body and neck be flaccid; the body may contract, and fundus and neck be relaxed; the neck may contract, and the body and fundus be in a state of atony; the body and fundus may contract, and the mouth be relaxed: when these occur, different phenomena present themselves. Leveret and others have admitted the tonic power of the uterus to continue even after visible life had ceased; and, however much this circumstance may excite our surprise, or challenge our belief, it is, nevertheless, authenticated by various testimony. The latest instance of this kind I have met with, is recorded in the Edin. Med. and Surgical Journal, No. VI. of new series, p. 431, and related as follows, by Professor Herrmann, of Bern.

252. "On the third day after the death of a young woman who was in her sixth month of pregnancy, the nurse heard a loud noise proceed from the corpse. A physician was immediately sent for, who, on his arrival, found that the deceased had brought forth twins, which were enclosed in a membrane quite entire, and not in the least putrid. The placenta only appeared to have suffered from the effects of putrefaction."

253. Leroux also mentions a case of the contractile force continuing after death, from his own observation.* He says he was called to a woman in labour, who died about a quarter of an hour before his arrival. He was about to perform the Cæsarian section, when he saw an arm of the child without the vulva, and to which was attached a string. This had been applied by the women who were present, who had drawn by it so severely as to fracture the child's arm. He reprimanded them severely for their cruelty and ignorance; and, with a view to demonstrate to them how easily the lives of mother and child might have been saved, he turned and delivered the child without the least diffi-

* Obser. sur les pertes de Sang, &c. p. 29, ob. xiii.

culty. In doing this, however, he perceived the uterus to contract in proportion as the child was withdrawn, as if the woman were living. He was surprised at this, and introduced his hand into the uterus to convince himself of the fact: he found it contracted evenly, and the mouth of the uterus opposed the introduction of his hand. Doubting the woman to be dead, he employed the most active means for her recovery, but without success.

254. Secondly, the uterus possesses the power of alternate action: this action manifests itself only when attempting to expel something from its cavity; but can never do so, unless the tonic contraction is in a state of greater or less perfection. It never does take place, therefore, so long as the uterus is in a state of atony. This contraction has also been termed the spasmodic, or painful contraction of the uterus; as, for the most part, it is accompanied by pain. It is always the effect of stimuli, or mechanical irritation; hence it appears during labour; during abortion; or in the form of after-pains, to expel coagula; or any other foreign substances, as in dysmenorrhœa.* It is almost always attended by pain, but not necessarily: when pain attends, it is not because it is an inevitable consequence of contraction, but by reason of some change which the muscular fibre has undergone from civilization, refinement, or disease.† We see it sometimes

* It must not be supposed that the "labour pains" which declare themselves at the end of nine months in cases of extra-uterine conception, form an exception to this rule; for, in these cases, the decidua is always produced; but at this period it becomes an extraneous substance, and uterine contractions are established, to expel it.

† Several cases of such rapidity of labour have occurred lately, as to attract the attention of the medico-legal writers to the subject. A remarkable instance of this kind has recently happened at Arras, in France. A woman, aged twenty-two years, in the last month of pregnancy, was taken with some pain in the bowels, and thinking that she was going to have a stool, repaired to the "Garderobe." It was in the night. She had scarcely sat down, when her infant was born *without any pain, or the least notice*, and it fell into the privy below! She knew nothing of what had happened, till she heard the cries of the child. It was three hours before it could be liberated. It could not be resuscitated.—*Non. Medico-Chirurg. Review. Sept.* 1824.

As the absence of pain, during the efficient alternate contractions of the uterus, is disbelieved by some practitioners of midwifery, who have seen considerable shares of business, I avail myself of the testimony of Dr. Campbell to this point. Although far the greater part of the sex bring forth with pain, yet some few are met with, who have very little, or none at all. I knew a lady who in three successive confinements was not aware she was in labour, until rising from an arm-chair on

most efficiently excited without pain, as in the labours of the aboriginal women of this country: in the women of Calabria, and, among some, even in this, our artificial state of society. It tends, during its best action, to diminish the cavity of the uterus, and, consequently, to expel its contents; but its effects are but transitory; the uterus returns to the condition it was in before this contraction took place, and remains quiescent, until it is, by its proper stimulus, again called into action—thus alternating for a longer or shorter period; and now constitutes what is usually called "labour pains." This contraction is most successfully exerted when all the fibres composing the body and fundus of the uterus act simultaneously—for when it acts partially, it is more painful than when the action is general, and never achieves the object it is intended to effect.

255. In the brute, this contraction is successfully exerted without the intervention of pain; unless the labour be complicated with disease, or accident. When either of these occur, the same consequences follow—namely, pain. It would be wrong, therefore, to suppose, that the labour of the female brute is performed upon a different principle from the human female, because she is, for the most part, exempt from pain—for truly, the same general process occurs in both; and in each, the uterus exerts the same kind of action: the only difference is, the one is performed with pain, and the other without. It has been supposed by some, from the mere absence of pain in the brute, that the fœtus is expelled by one uniform, but sufficiently long-continued effort, without the intervention of the alternate contraction; but this is not so—as any one may at once convince himself, by observing the progress of a labour in almost any of our domestic animals. It will be distinctly, and easily perceived, that there is from time to time, a suspension of uterine effort, and a repetition of it; marking, most conspicuously, the intervention of the alternate contraction.

256. In the brute the alternate contraction is attended with pain, when the uterus is provoked by accident or disease, to severer exertion than ordinary—and when this happens, their sufferings are as great, cæteris paribus, as those of the human female. From this it would appear, that such a condition of fibre may be

which she had been sitting, a sensation was communicated to her, which compelled her to call for assistance; and she could scarcely be got to bed in the same room when the child was born.—*Intr. to the Study and Practice of Med. p.* 170.

accidentally induced in them, as is pretty permanently fixed in the other. The alternate contraction would appear to be nothing more than a sudden and an exalted degree of the tonic; and the pain which so usually attends this action, arises from some morbid or altered condition of nervous energy in the muscular fibres composing the uterus. This would seem to be proved by the effects which have followed civilization and refinement—and the consequences of domestication may be traced in those animals which participate with man in his departure from his original simplicity; for we are informed, that the artificial condition to which the cow, especially, is reduced by domestication, in and near great cities, subjects her to more difficult and dangerous labours, than those in the natural, or less artificial state.

257. So far as we can determine the point, it seems, that the longitudinal fibres of the body in general, and those of the uterus in particular, have more especially felt the influence of the causes just mentioned; for man is said to have lost much of his original vigour and strength; and women suffer from child-bearing; while the circular muscles and sphincters appear to have lost nothing of their primitive power: thus, the heart and intestines have parted, perhaps, with none of the original vigour with which from the beginning of the world, they were endowed; nor have the several sphincters, among which the orifice of the uterus may be justly reckoned, suffered from constitutional abuses.

258. In the uterus, in particular, we may observe pretty nearly the same thing—for I hold it more than probable, that the circular fibres of this organ have not deteriorated in the same degree as the longitudinal, nor are they subject precisely to the same penalty, since they may contract with great force, without the production of pain. We see this well and satisfactorily illustrated in that condition of the body of the uterus, called the hour-glass contraction. This state may continue for hours, without being attended by pain.

259. The contractions of the uterus are entirely independent of the will; their intervals can neither be accelerated nor retarded by any exertion of it; nor can their force be either augmented or diminished, by its influence; but passions and emotions of the mind, when strong, oftentimes exert a powerful influence over uterine action—they may call it into play, at a time the least expected; or may suspend it, after it has been strongly excited. The first is proved by passions and emotions being often followed by abortion; and the latter by the following fact, which fell un-

der my own notice:—In 1792, I was called to attend a Mrs. C——, in consequence of her midwife being engaged. As I approached the house, I was most earnestly solicited to hasten in, as not a moment was to be lost. I was suddenly shown into Mrs. C's. chamber, and my appearance there was explained, by stating that her midwife was engaged. As I entered the room, Mrs. C. was just recovering from a pain—and it was the last she had at that time. After waiting an hour in the expectation of a return of labour, I took my leave, and was not again summoned to her for precisely two weeks. And Dr. Lyall says, "We have been informed by a respectable practitioner, of a labour that had nearly arrived at its apparent termination, suspended for more than two days, in consequence of a gentleman having been sent to the patient, against whom she had taken a prejudice."* Every accoucheur has experienced a temporary suspension of pain upon his first appearance in the sick chamber; but so long a period as two weeks is very rare.

CHAPTER IX.

OF DISPLACEMENTS OF THE UTERUS.

260. Notwithstanding the uterus has four ligaments, purporting to support and sustain it in situ; yet this is so ill performed, as to render it very doubtful whether such was the express intention of nature in their formation. Certain it is, the uterus is subject to the impulses of the abdominal viscera; to the pressure of the distended bladder; and to the influence of the loaded rectum and sigmoid flexion of the colon; and we may add, to the consequences of its own internal weight after conception.

Sect. I.—*Of Prolapsus from Pregnancy.*

261. The latter of the causes just enumerated, (260) very often sink the uterus so low in the pelvis, as to make it completely occupy the vagina; and it sometimes even discovers a disposition to escape from the os externum—this subjects the woman, when excessive, to certain inconveniences; but to none, when moderate; except, perhaps, a sensation, as if something were escaping

* See Minutes of the medical evidence given in the Gardner Peerage cause.

from the vagina, when she is in an erect posture; but this is almost instantly relieved, when she disposes herself in a horizontal position. When more excessive, it creates embarrassments to the flow of urine, and the discharge of feces. These inconveniences rarely require medical interference; as they are relieved after a short time, when the uterus acquires a sufficient bulk to rise out of the brim of the pelvis. When interference is required, the application of a proper pessary is all that is necessary.

262. I recollect distinctly but two instances, in which it was necessary to introduce the catheter—for the woman is easily instructed to lie upon her back with her hips a little elevated when she is importuned to pass her urine; or readily taught to press back the uterus with her finger, should this not succeed; or to go upon her knees, which has, in several instances, been all that was necessary.

263. It is, however, liable to some other derangements, which are much more difficult to remove, and much more serious in their consequences: these are the retroversion and anteversion, as well as the prolapsus, when pregnancy has no agency in it.

Sect. II.—*Retroversion of the Uterus.*

264. The retroversion is that displacement of the uterus, in which the fundus is precipitated backwards, and places itself between the rectum and bladder in such a manner as to be readily felt, behind the vagina, upon the introduction of the finger into it, while the neck is mounted up, behind the symphysis pubis.

265. This situation of the uterus was not distinctly known, until Dr. W. Hunter,* in 1754, favoured the world with an account of it, accompanied by accurate drawings of the parts. Since that period, this disease has claimed much attention, and is now perfectly well understood by all well-instructed accoucheurs. It is not, however, regarded of equal consequence by all: while Hunter, Baudelocque, Meygrier, Burns, &c., look upon it as an accident of serious moment; others, as Denman and Merriman, view it almost with careless indifference. As both cannot be right, we shall, in the prosecution of this subject, attempt to show which of the opinions has, in our estimation, the strongest claims to confidence.

* Med. Obs. Vols. IV. and V.

266. This deranged situation of the uterus may take place in its unimpregnated, as well as in its impregnated state—the latter is, however, by far the more common. It usually takes place between the second and the fourth months of pregnancy, as after the latter period, the length and thickness of the uterus will exceed the opening of the superior strait, and prevent its folding down upon itself. (See 199.)

267. The remote cause of this complaint is, whatever tends to depress the fundus; and may be external violence, such as blows, pressure, sudden exertion, &c., or violent efforts to vomit, violent coughing, an over distended bladder; or perhaps, an unusual accumulation of feces in the rectum, or sigmoid flexion of the colon. These causes may operate suddenly, so as instantly to produce the disease; or slowly, requiring a long time for its completion.

268. The symptoms produced by this unnatural situation of the uterus, may be more or less violent, according to the size it may have acquired; or as the displacement may have been suddenly or slowly produced. When suddenly induced, the symptoms are usually violent and alarming—such as an immediate interruption to the flow of urine, or permitting it to pass with great difficulty; or a stoppage of the feces; alternate pains, accompanied by great forcing or bearing down; a disposition to faint, &c. When considerable time is spent in completing this displacement, the evils arising from it are less urgent and severe, because the parts gradually become accustomed to their new situation. But in either case, if the uterus be not restored, the symptoms increase in intensity; and instead of a difficulty, and frequent inclination to make water, there will be a total suppression of it, accompanied by a painfully intense desire to pass it—for the fœtus goes on to increase in size, and the uterus to develope itself; thus giving additional pressure to the parts with which it is in contact.

269. When this accident happens in the unimpregnated state of the uterus, the symptoms, so far as I have observed, are never so distressing; the reason for this will be easily comprehended; but the parts do not become entirely reconciled to their new situation. In the impregnated state, however, so much restraint is not imposed upon the uterus, as to prevent its farther development, as we have already stated; but the effects of this increase can most readily be anticipated. Experience has abundantly shown, that if the fundus be not restored, the uterus will

go on to augment, so as at last to completely occupy the cavity of the pelvis.* This distinctly points out the time for the restoration of the fundus uteri.

270. The symptoms I have enumerated may, however, proceed from other causes; it will, therefore, be proper to ascertain by the touch the situation of the uterus, so soon as symptoms become urgent. If retroversion have taken place, a roundish tumour is felt at the posterior and inferior part of the lower strait, occupying more or less room, as the uterus may be a longer or shorter time impregnated, or as it may have been a longer or shorter time displaced. The finger cannot touch the projection of the sacrum; but may gain a passage to the upper strait, immediately behind the symphysis pubis, where, if the neck has not mounted too high, the os tincæ may be felt.

271. This disease may be mistaken for a prolapsus uteri; but can most easily be distinguished from it: 1st, In the retroversion, the vagina interposes between the finger and the tumour; and the neck of the uterus is mounted up behind the symphysis pubis. 2d. By the absence of the neck of the uterus, which is always found in advance of the body and fundus, in a prolapsus. 3d. By the symptoms never being so extreme, in the latter. 4th. By the prolapsed uterus almost always being moveable; whereas, in the retroversion, it is obstinately fixed. It may also, according to Mr. Burns, be confounded with a diseased ovarium, when it may chance to occupy this place; or with an extra-uterine conception, when it may have placed itself between the rectum and vagina; these two complaints may be distinguished by noticing, that in both the diseased ovarium, and the extra-uterine conception, the neck of the uterus is always within reach of the finger; and also that a long catheter may be readily passed in the natural axis of the uterus; for I believe the fundus would not be carried down by either of these bodies.

272. I may, moreover, observe, that both ovarial tumours and extra-uterine conceptions are of slow and regular progress; especially, perhaps, the latter; therefore, should it produce symptoms analogous to retroversion, they would be of very gradual increase; and would require a long time for the symptoms to become imperative.

273. Dr. Denman has well described the mechanism of this accident; but we cannot agree with him entirely as to its cause;

* See Dr. Hunter's case, Med. Obs. and Inq.; also, Wilmer's cases, p. 144.

he considers that a distended bladder is always the immediate cause of retroversion, and that a suppression of urine is absolute only before, or during the act of retroverting; therefore, a stoppage of the water is the cause, and not the consequence of this complaint, as we have declared it to be, (268.) We cannot, however, subscribe to this doctrine; and for the following reasons: 1st. Because we are certain that it has been suddenly produced by violence, and without the intervention of a suppression of urine. Baudelocque also declares the same thing. 2d. Because Baudelocque demonstrated to his class a slow retroversion, which lasted three or four weeks before it was complete: in this case, there is no mention of any difficulty in making water.

274. Dr. Denman declares, also, that "the uterus must be elevated before it can be retroverted." To disprove this, it is only necessary to recur to those cases which have been suddenly induced, as I myself have witnessed, from external violences: though I admit that the elevation of the uterus would render it more easy of retroversion, were the remote causes acting at the same time. For were the elevation of the uterus essential to its becoming retroverted, how should it ever take place in the unimpregnated state? a circumstance I have more than once seen. In one instance to which I was called, the patient had been delivered but a few weeks. In this case the symptoms were very distressing, as was witnessed by my friend Dr. Parrish; nor were they relieved, until the uterus was restored by manual exertion.

275. The diagnosis of this complaint, as given by Dr. Denman, will readily lead to the explanation of his considering this a trifling disease: he says, "If a woman, about the third month of pregnancy, has a suppression of urine continuing a *certain* length of time, and producing a certain degree of distention of the bladder, we may be assured that the uterus is retroverted. Should a mere suppression of urine in a pregnant woman really indicate a retroversion, as is declared by this gentleman, we can readily account for his indifference to its consequences, and his trusting its cure to nature, or the occasional drawing off the water by the catheter. The young practitioner is forewarned against this uncertain sign, and plan of treatment. On the contrary, he is to look upon this complaint as one of eventual, if not of immediate danger; especially, when the temporizing plan we shall now speak of, does not succeed.

276. As the most pressing symptom in retroversion is the in-

terruption of the urine, we must most sedulously endeavour to prevent its continuing too long; and the consequences of delay ought to be candidly stated to the woman, should she permit her delicacy to interrupt an essential point of duty. The catheter should be employed pro re nata; and the bowels emptied daily, either by medicine of a milk kind, or by injections; if this plan do not succeed in restoring the fundus, in a short time,* we should then maturely consider the propriety of replacing it mechanically. To aid our judgment, we should consider, first, the period of gestation; secondly, the degree of development of the uterus; thirdly, the nature or severity of existing symptoms. The period of gestation should almost always influence our conduct in this complaint; and we may lay it down as a general rule, the nearer that period approaches four months, the greater will be the necessity for acting promptly to procure the restoration of the fundus; the reason for this is obvious; every day after this will but increase the difficulty of restoration, as the ovum is continually augmenting in size. The degree of development should also be taken into consideration; for one uterus may be as much expanded at three months, as another is at four; consequently, if this obtain, there is a decided reason for acting earlier, than may at other times be necessary; so also at the fourth month, if the development be less than is usual for that period, we may, every thing being equal, delay the attempt at replacement, if any reason present itself to make this eligible. The extent or severity of symptoms must ever be kept in view; for instance, we must not temporize too long where the suppression of urine is complete, and cannot be relieved by the catheter; lest the bladder become inflamed,† or gangrenous,‡ or burst.§ For the bladder, from its very organization, cannot bear distention beyond a certain degree, or beyond a certain time, without suffering serious mischief.

277. From this I conclude, that the uterus should in every instance be restored, when practicable, at, or very little after, the fourth month; for, if left longer than this, the chance of succeeding is every day diminished; and I am firmly of opinion, that

* It would be difficult to point out any precise time for temporizing, as every thing must depend upon the emergency of existing symptoms, and these will necessarily be influenced by the period of gestation. The interval of time employed by a pro re nata plan, should be always shorter, as the period of pregnancy may approach the fourth month.

† Dr. Bell, Med. Facts, Vol. III. p. 32. ‡ Mr. Lynn, Med. Obs. Vol. V. p. 388.

§ Dr. Squire, Med. Review for 1801.

nothing can justify longer delay at this time; more especially, if it proceed from the vain hope, that nature will relieve herself at the full period of gestation.*

278. The symptoms I have noticed above, should teach us the propriety and necessity, of ascertaining the true situation of the uterus, by an examination per vaginam; and until this be done, though we may be disposed to hint our suspicions, we should never positively affirm, that the patient is labouring under retroversion. For I have frequently prescribed a little sweet nitre and laudanum for a difficulty of passing water in pregnant women, with the most decided success; and when these symptoms were more severe or obstinate than common, I have examined per vaginam, and sometimes without finding the uterus in a state of retroversion.

279. My experience has furnished me with few facts of which I am more certain, than that "a certain degree of distention of the bladder" may exist, and for a considerable time, without producing retroversion; even where I have been under the ne-

* It is with both surprise and regret, that I observe myself charged with a want of precision in the treatment of this complaint, No. III. Vol. IV. third series of the New England Journal, &c. After having quoted at length the whole of paragraphs 276 and 277, the writer says, "We have thought much of this matter, and still do not feel satisfied with the course prescribed by Dr. D. in this quotation. We may have expressed ourselves too strongly, in saying the 'course prescribed' by the author. His language is not very precise, and *we understand him as saying and teaching*, that attempts to reduce the displaced organ need not be made before the fourth, or at a very little after the fourth month. This, to us, is not sound doctrine." Nor is it to me; nor have I said, or ever taught, such a doctrine. And it is unfeignedly a matter of wonder that such a construction could have been given to what I have advanced in the two paragraphs just indicated. For, through the whole of my directions, I have aimed at precision; and, in par. 277, I expressly deprecate a delay beyond the fourth month; and distinctly recommend the attempt at reduction without regard to the period of gestation, wherever symptoms become pressing; but until then, I am every way willing to temporize, as restoration sometimes takes place spontaneously; but I believe we lose nothing by delay up to the period pointed out, where the condition of the bladder does not form the principal indication.

From what I have seen of this complaint, I am disposed to think, that the reviewer will alter his opinions, when he has witnessed more cases than he probably has up to this time. I view the complaint in as serious a light as he possibly can; indeed, I am charged by some with having unnecessary fears, and of recommending interference, when it is not called for; it will, therefore, be seen that, on the one hand, I am accused with too much indifference to the treatment of this complaint; and on the other with absolute temerity. I shall not, however, feel myself guilty of either, until future experience proves my present views to be wrong.

cessity of using the catheter. And I am also certain, in retroversion, that the mere removal of the urine will but rarely, nay, not once perhaps in ten times, be sufficient to ensure the spontaneous restoration of the fundus, where the complaint is of long standing, or the pregnancy advanced beyond the third month. But let me be clearly understood to mean, that the precaution of drawing off the water when practicable, and that as frequently as the exigencies of the case demand, is indispensable, either to the spontaneous or artificial replacement of the uterus.

280. I have great reason to believe, that an exclusive reliance upon drawing off the water, has been productive of the most serious evils, if not of death itself in some cases: it, therefore, should never be exclusively trusted to, except at the early period of gestation. If the woman approach, or if she exceed the fourth month, the attempt at restoration should most unquestionably be made; nor should it be abandoned, but for very strong reasons; nothing, indeed, but the impossibility of succeeding, should induce us to leave the patient to her fate—I say, to her fate; for, what can we promise ourselves in her favour?*

281. The objections usually urged against the attempt to replace the fundus, are, 1st. The hazard of provoking abortion: 2d. That it does not always succeed, after strong and repeated efforts.

282. With respect to the first, there is abundant proof in my own experience, as well as that of others,† that abortion is not a necessary, though it may be a possible consequence of the attempt. I have never seen it follow: therefore the fear of an imaginary evil, must not induce us to subject our patient to a serious and positive harm. The risk of abortion is but trifling; but the neglect of restoration at the proper time, is a very serious piece of mismanagement.

283. As regards the second, if it fail, it must generally be attributed to our neglecting the proper moment for acting; or, when it has not been properly performed. Having decided upon the propriety and necessity of giving aid to the suffering woman, I shall next give directions for the best mode of performing this operation. I must first consider what forces are operating to prevent the restoration of the fundus, before I describe how they are to be overcome: they will be found to be, 1st. A distended bladder. 2d. An impacted rectum; and most probably a loaded

* Merriman. † See Baudelocque, Hunter, Wall, Meygrier, &c.

colon at its sigmoid flexure. 3d. The counteracting efforts of the woman herself. 4th. The too great bulk of the uterus.

284. Therefore, the first thing to be accomplished is, the evacuation of the urine by the catheter; in this, it is said, we cannot always succeed. I have never met with such a case but once; and Mr. Burns declares the same thing; nay, he even goes farther; he says he does not believe it can occur: it must, therefore, be very rare.* Dr. Denman has some very useful remarks upon this subject, which I would recommend to be studied—he advises the employment of the flexible male catheter; in this I heartily concur; he also cautions against any attempt to display dexterity, by the quick introduction of this instrument; and recommends the slow and cautious use of it—he also proposes pressure upon the abdomen, to promote the discharge of the urine; I may, however, add, that not only the introduction of the catheter should be slow, but the drawing off the water also —for I am certain I once saw death follow the sudden discharge of this fluid.

285. To overcome the second difficulty, injections should be thrown up the rectum, if practicable; but which, it must be confessed, is sometimes impossible—we can succeed, however, with the elastic gum catheter of a large size,† when the common means have failed: the injection should consist simply of a table-spoonful of common salt and a pint of water. A few hours before we attempt the reduction, small but repeated doses of the sulphate of magnesia may be given; provided the stomach is not distressed by vomiting, or severe nausea.

286. The third difficulty which may oppose us, is the violent and involuntary efforts to bear down, to which the woman is excited by the presence of the hand within the vagina—this is decidedly the greatest trouble we meet with in ordinary cases—for we may be foiled in our attempts at reposition, from this cause, though the emptying of the bladder and rectum should not

* Since the above was written, a case under the care of my friend Dr. Jackson, and myself, has occurred—in this case it was impossible for several hours to pass the catheter. By leeching, and injections, however, this difficulty was eventually overcome, and the uterus restored *itself* in due time.

† There has lately been invented a forcing syringe, by which almost any quantity can be pumped into the colon. In cases like this, it might be well to throw into the bowels such a quantity of warm water or flaxseed tea as will cause, from its bulk, a discharge from the rectum. A large flexible gum elastic tube, can, we believe, with care, be always introduced to the necessary height in the bowel, in these cases.

have been found troublesome. To overcome this opposition, experience has repeatedly taught me the efficacy of bleeding to fainting, or near to it.

287. When we have determined upon the bleeding, we should be prepared, beforehand, to take advantage of the deliquium the moment it occurs; as its continuance is transitory—the bed should be prepared in such a manner, as will allow the patient to lie upon her back, with the perinæum free from the edge of the bedstead, and her shoulders a little depressed—some protection should be placed between the back of the woman and edge of the bedstead, that she may receive no injury from its hardness: the parts should be well lubricated with hog's lard, oil, or a strong mucilage of flaxseed—a chair should be placed for each foot to rest upon; and these supported by two assistants. The position is the same, as recommended for "turning," &c.*

288. When every thing is in readiness, the arm should be tied up, and the patient made to *stand* near the bed; a large orifice must be made, and blood drawn until faintness is induced—when this happens, the arm can be secured, and the woman placed as just directed—the hand, after being well lubricated, should be passed into the vagina, in a state of supination; the fingers retracted in such a manner, as to form a straight line at their extremities; they must then be gently pressed against the base, as it were of the tumour found within the vagina, so as to move it backwards and upwards along the hollow of the sacrum, until the mass shall reach above the projection of this bone: when thus far, the hand may be withdrawn; and a pessary or a piece of sponge should be introduced of a proper size: the woman must remain quiet in bed for three or four days, the urine, for this period, should be drawn off as often as may be required; and the feces evacuated by injections.

289. The last of our embarrassments arises from the size of the uterus being equal to, or greater than the opening of the superior strait; this will be confessed to be one of much moment and interest—yet, I trust, it is not beyond remedy—I believe that the plan just suggested, might succeed even here: but I confess it wants the test of experience. It should, from every consideration, be tried before severer means be adopted; for if it fail, we lose nothing. But suppose it fail, what is to be done? Three modes of operating present themselves in this dilemma.

† See Chap. XVIII. Sect. 1.

290. First, to confide entirely in the resources of nature, as recommended by Dr. Merriman.

291. Secondly, to attempt to provoke abortion, by rupturing the membranes, through the os tincæ.

292. Thirdly, to puncture the uterus through the rectum, as advised by Dr. Hunter, or through the vagina, as practised by M. Jourel.

293. With respect to the first, there is, from all I can learn, but little temptation to trust to it. See strictures on Dr. Merriman's opinions, in "Essays on various Subjects connected with Midwifery," by the author, p. 291.

294. The second, if practicable, would unquestionably be the mildest and safest; but its success, (so far as I can at present determine,) must be very uncertain, or, it may be always impracticable.*

295. The third alternative has been condemned by some of the British writers; but, as it would appear, without sufficient reason; since M. Jourel succeeded recently in a case, the details of which are highly interesting and instructive, and should be carefully consulted by all who practise midwifery.† We find also in the Ed. Med. and Surg. Journal, for April, 1830, that this operation has also been performed with success, by Mr. Beynham.

296. In the anteversion, the fundus of the uterus is thrown forward, and downward; so that it presses immediately against the posterior and inferior portion of the bladder, while its neck is carried backward towards the projection of the sacrum. In this displacement, the symptoms are said to be less severe, than with the retroversion—the tumour being anterior, and the neck of the uterus posterior, will readily distinguish the one from the other—I have never seen a case of this kind so strongly marked as to leave no doubts of its existence—I was once called to a patient in whom I suspected it had taken place; but it was in a partial degree, if at all—the symptoms were distressing, but eventually relieved by the use of the catheter, and anodyne injections. This disease has been mistaken for stone in the bladder, agreeably to Luret,‡ and the operation of lithotomy absolutely performed.§

* See Essays on various Subjects, &c. by W. P. Dewees, p. 287.

† Dictionnaire des Sciences Medicales, Vol. IX. p. 31.

‡ Jour. de Med. Vol. IV.

§ Notwithstanding Dr. Ingleby advocates, and apparently believes, in Dr. Mer-

297. When the unimpregnated uterus is retroverted, it creates fewer inconveniences than when impregnated—the indications are precisely the same—the mode of reduction is also similar. This can sometimes, however, be effected without the introduction of the hand, by the proper application of the fingers alone—I succeeded in this way, in two instances of this kind of retroversion; both of which, however, were very recent when the attempt was made.

Sect. III.—*Of the Obliquities of the Uterus.*

298. The inconveniences arising from these species of displacement of the uterus, are sufficiently serious to merit an exposition of their mechanism. When we consider the globe-like form that the uterus constantly presents during its development; when we recollect how feebly it is supported by its ligaments; and bring to mind the angle at which it must pass through the superior strait, we shall not be at all surprised to find it fail to maintain such a situation in the abdomen, as will enable the axis of its fundus, and that of the superior opening of the pelvis exactly to coincide. If we add to this, the peculiarity of conformation of several of the parts of the pelvis, and of its more immediate dependencies; and the influence these have upon this organ during its ascent into the abdomen, we shall soon be convinced of almost the impossibility of its centre preserving a correspondence with that of the pelvis—hence the constant presence of obliquity in one form or other, in almost every pregnancy.

299. The obliquities of the uterus may be divided into three kinds:—1st. The right lateral obliquity: 2d. The anterior obliquity; 3d. The left lateral obliquity.* In the first, the fundus of the uterus is found more or less inclined to the right por-

riman's notions on the subject of retroversion; and his declaration, that they will be adopted by the profession, mauger "Dr. Dewees' severe criticisms to the contrary," we remain unconvinced; and shall remain so, until Dr. M. or Dr. I. furnishes the public with other arguments, or less disputable *facts*, than they have hitherto done. We are always sorry to differ from gentlemen of the high standing, and acknowledged talents that these gentlemen so justly merit, but we feel we have no right to yield our opinions, unless they are *proved* to be wrong, by additional facts, or lucid argument.

* Leveret has added a fourth—this consists of a falling of the womb backwards upon the lumbar vertebræ; but that this obliquity may take place, it is necessary that this column be flexed outwards—a deformity may give rise to this variety of obliquity, but cannot happen without it: it is therefore not necessary to notice it farther.

tion of the abdomen, and its length and departure from a vertical line can readily be detected by the hand placed upon it—and when this inclination is excessive, as it sometimes is, it may be observed by the eye, especially if the woman be viewed from behind. This species is by far the most frequent; owing to the constant presence and influence of certain determining causes: 1st. The manner in which the rectum descends in the hollow of the sacrum; the rectum, in passing into the pelvis, does not preserve the centre of this bone, but inclines rather to the left portion of it; of course, when filled with feces, it will occupy a part of the lower strait; and consequently, will give an inclination to the uterus towards the right side; 2d. The sigmoid flexion of the colon, from its position, and almost constant distention, will aid by its impulses the already inclined fundus, in the same direction; and if we add, 3d. The round projection offered by the salient portion of the sacrum, we shall be at no loss to determine why the right lateral obliquity is of all the most frequent. It would not, however, be correct to suppose, that the os uteri would be found always in an exact line with the fundus—I have known a number of exceptions to this.

300. In the second, or anterior obliquity, the fundus of the uterus continues to advance in the direction it received when passing through the superior strait—when treating on the pelvis, I mentioned that this was at an angle of between thirty and forty degrees; consequently, the fundus would carry the abdominal parietes before it in all instances, were not a counteracting influence found in the firmness and elasticity of these parts—therefore, the anterior obliquity will be, in frequency and extent, in exact proportion to the want of resistance from these parietes: hence, it is rare in a first pregnancy,* owing to the firmness of the abdominal integuments; and of very frequent occurrence in subsequent ones. Sometimes the extent of this obliquity is almost incredible, especially in small women who are much upon their feet; and in those who have a deformity of pelvis. In this obliquity there will be more or less correspondence of the axes of the fundus and mouth of the uterus, as this deviation may be more or less excessive.

301. This obliquity is almost always a source of great inconve-

* It may be proper to observe, I have never seen it take place in a first pregnancy. I have seen one exception since the above was written.

nience to the woman even before labour; for after the seventh month, the fundus is so depending, and so much in advance, as to alter the usual centre of gravity; and the woman is, when either walking or standing, obliged by constant exertion, to make herself a new one. This is accompanied often, and more especially towards the latter period of pregnancy, with severe pain in the back, loins, and hips; together with a forcing and bearing down; urging the woman to make water, or to go to stool. I have frequently known these symptoms so severe, as to oblige the woman to keep her bed, that she might enjoy a moment's respite from their urgency—this especially happens to short women who have had a number of children, and who have always had severe labours.

302. I have been frequently consulted for this very unpleasant situation of the uterus—but there is but one remedy for it, so far as I know; namely, to support the body and fundus, as much as may be, by a proper bandage, or dress—the most effectual I have employed is, a pair of drawers with a waistcoat attached to it which will lace behind. The waistcoat need not reach but a little above the umbilicus; but it must be maintained in its situation by a support from above by a pair of properly adjusted suspenders. This dress should be put on in the morning before the woman rises upon her feet; and when it is about to be applied, the fundus must be raised, by the hands of the patient being placed under it, and lifted as it were upwards; while the back part of the waistcoat is laced sufficiently tight to give support to the uterus, when left to itself. By this simple contrivance, I have seen women become active, and capable of attending to their domestic concerns, who, previously to its application, were confined to their beds.

303. The third or left lateral obliquity, is so rare, as to scarcely merit mention; and especially, as the inconveniences arising from it must be nearly the same as from the right lateral; and the mode of remedying it also the same, mutatis mutandis.

304. It is of much practical importance, that these different deviations be known, as they are, for the most part, of easy remedy; but when not, much suffering is experienced. Thus, in the right lateral obliquity, placing the woman upon her left side, will very frequently be all that is required; but should this position not bring the os uteri to the axis of the pelvis, we must aid it by the introduction of a finger within it, when *it is either well dilated or easily dilatable;* and this, in the *absence of pain;* when

hooked, it must be gently drawn towards the symphysis pubis, and retained there, until a pain ensue; should the contraction of the mouth of the uterus offer much opposition to the force which is to keep it at the symphysis, as just mentioned, we should gradually yield to it; but need not withdraw the finger—when relaxation has taken place, we again conduct the os uteri to the place before indicated; and maintain its position there, unless again forced to relax our effort for the reason just stated—in this manner we alternately retract, and relax, until we establish a correspondence between the axes of the fundus, the mouth of the uterus, and the pelvis: when this is accomplished, we will find the labour advance with more rapidity, and with less pain.

305. In the second, or anterior obliquity, the same indication presents itself; namely, to procure a proper relation between the axes of the uterus and pelvis; but the mode of fulfilling it is different—in this case we place the woman upon her back; and, at the time, and under the circumstances pointed out above, (304,) we, with the point of the finger, search for the os uteri *towards the projection of the sacrum.* In cases of *extreme* obliquity, it is oftentimes difficult to reach the os uteri by the ordinary mode of examination: when this happens, the pendulous belly should be raised and supported by an assistant, with a view to depress the os uteri—should this not succeed, and should the pains be brisk, the head will be found to sink lower and lower in the pelvis, covered by the stretched anterior portion of the uterus. If advantage be not now taken to introduce the hand to restore the os uteri to the proper axis of the pelvis, much suffering must be endured and much risk incurred by permitting the head to descend, covered by the uterus.

306. Whenever the os uteri *cannot be reached* by a well-directed search in the ordinary way, we must introduce the hand well lubricated,* so that its palm may be next to the distended uterus;

* I have seen with much pleasure, in the July and August Nos. of the Lond. Med. and Chir. Review, a most liberal examination of this work. But the author of the Review seems not to have clearly understood this par. (306) as he cautions against the introduction of the hand, for the purpose of rectifying the bad position of the os uteri; stating, it would be a difficult or painful attempt to do so, with a first child. ' I agree, under such a circumstance, it might be inconvenient; but the obliquity now under consideration, I have never known to take place in a first pregnancy but once; consequently, the objections cannot be constantly valid: yet, were it even to happen in a first labour, I would unquestionably pursue the same conduct, from a conviction that I should expose my patient to the lesser evil.

a finger should then be made to reach up to the neighbourhood of the projection of the sacrum, where, on some one portion of the uterine globe, the os uteri will be detected—when discovered, we should hook it upon the point of the finger, (provided it is either dilated or easily dilatable,) and draw it towards the centre of the inferior strait—when it has followed so far, the hand may be gently withdrawn, (but not the finger from the os uteri,) and the uterus detained there, until the proper direction of the forces, and the axis of the uterus, are in correspondence. By this simple proceeding much time and suffering are saved; and, in some instances, I am well persuaded that much risk is prevented. Baudelocque has most satisfactorily illustrated the advantage of judicious interference, and the consequences of the neglect of it, by the recital of two apposite cases, to which I would refer the reader with much advantage to himself.

307. Chapman also relates a somewhat similar case; that is, labour was long protracted in consequence of the very posterior situation of the os tincæ. He introduced his finger, drew it forward, and established a proper correspondence between the direction of the uterine forces and the axis of the os uteri. Chapman, however, does not appear to have understood his own case; he supposed the delay was occasioned by the os uteri being but little opened. He attempted its dilatation; and this attempt brought the opening of the uterus to correspond with the axis of the vagina, by which means the woman was speedily delivered.*

308. I must take this opportunity to notice a few remarks made by Mr. North upon this point, in the London Medical and Physical Journal, for September, 1827. Mr. North seems averse from pursuing the plan I have proposed for the relief of the anterior obliquity of the uterus. He objects to the plan, because

Let me, however, be clearly understood to mean, that I would introduce the hand, if the labour, from its duration and force, gave me reason to believe, that the want of progress of the presenting part was owing to the constrained position of the uterus; and when the os uteri cannot be reached by the ordinary mode of examination; consequently, when it did not correspond with the axis of the pelvis. This I confess to be a situation of rare occurrence; yet it is one to be met with, as I can testify, and it should be provided for, if it occur: for, if the os uteri be not within reach by a common search, and it shall give rise to an operation like the one to be related presently, would it not then be more than fastidious, to withhold a proper examination, from a mere repugnance to introduce the hand into the vagina, if the labour were even a first one?

* Treatise on Midwifery, p. 15.

he has "known inflammation of the uterus produced by the rough and repeated efforts of young practitioners to 'hook' down the os uteri." Now, this certainly is only condemning the abuse of the method; which should never be considered as a valid objection against the employment of a well-directed one. I can with very great confidence declare, I have never known even pain excited when this simple operation has been performed by myself; nor can I ever believe that any inconvenience would follow the plan, if properly performed by any one else. If we are to hesitate to recommend useful practical operations, because they may be illy performed by the careless or the ignorant, we should at once banish from medical science its best resources, and its greatest triumphs.

309. Mr. North most flatteringly expresses his entire belief, that *I* could have recourse to the plan recommended without injury to my patient: now, if this be true, it must necessarily follow, that it is not *essentially* dangerous; and if the directions laid down be strictly followed, I am persuaded it cannot be even *contingently* so. I agree perfectly with this gentleman, and with Dr. Denman, whom he has cited to strengthen his objections, that time may sometimes effect delivery in the obliquity in question, without seriously injuring the patient; but it cannot do this without causing long and severe suffering. It is not denied by Mr. N. that this situation of the uterus may create some embarrassment, if unreduced; as he recommends, for this purpose, that the woman should be placed upon her back, as I have done; but he makes no provision in case of failure from the change of position, except that time will overcome it, if a sufficient quantity of it be given.

310. In the case under consideration, the question is not, whether the unaided powers of the uterus may not *eventually* overcome the difficulty caused by the anterior obliquity of this organ. The true one is, whether we cannot, most profitably to the mother and child, interfere. As far as my own experience goes, I can most conscientiously answer this in the affirmative. This was the opinion of Baudelocque, from whom I learn this treatment; and he is certainly authority equal to Dr. Denman.

311. Mr. North remarks as follows, upon a part of the plan in question: "According to the directions of Dr. Dewees, we are not to remove the finger from the os uteri, 'until the proper direction of the forces and the axis of the uterus are made to correspond.' It must obviously, then, be impossible for the prac-

titioner to determine whether the favourable change in the position of the parts is the result of his assistance, or the continued uterine efforts which have been going on." I would inquire, in what the difficulty in this instance lies. Can it be imagined, that a practitioner, especially one who appears to be so judicious as Mr. N., should for a moment be at a loss, to what cause to attribute the change in the direction of axes; the descent of the head; and the rapid termination of a labour, after establishing a correspondence between the mouth of the uterus, and the axis of the upper strait? Previously to the interference, hours had been fruitlessly spent; and the os uteri was mounted high before the projection of the sacrum; and though soft, and yielding, no exertion of the uterus could make the head engage in it, and consequently could not descend through it; but in a few moments, all these unpleasant conditions are favourably changed, by merely drawing the os uteri to the centre of the pelvis, (316, 317.) Yet we admit that the head may be forced lower into the pelvis by the long-continued contractions of the uterus; but it must be recollected, when this is the case, it makes its way by stretching the anterior portion of this organ, (305,) a circumstance, in some instances, highly dangerous, and not by passing through the axis of the mouth.*

312. But I would ask in all sincerity, what is to be apprehended, if the rules I have laid down, and the circumstances under which it is directed we should act, be strictly observed? we cannot see either difficulty or danger; and we must insist, that in the cases in which it is necessary to interfere, it is a duty to do so; for we hold it to be a sound principle, that whenever we can spare an hour's, or even less of unnecessary pain, it is right, nay it is obligatory upon us to do so. We are not to permit a patient to suffer a great positive evil, from the apprehension of a small contingent one.

313. We must therefore insist, that though nature unaided may struggle through a difficulty, it is not right to permit her to do so, if we can, by a timely and judicious interference, abridge her efforts. Besides, it is not a necessary consequence, that nature can perform the task assigned her, with entire safety to the patient, if even time be given; for her efforts are far from being always crowned by success, or always free from hazard. I would therefore still insist, because it so entirely comports with often-repeated experiment, that is the duty of the accoucheur, in cases

* Baudelocque, loc. cit.

of anterior obliquity, always to act as has been directed, (306) whenever the natural forces do not, in a reasonable time, establish a correspondence between the axis of the pelvis, and of the os uteri, and when the latter is either dilated, or easily dilatable. And we must farther insist, that no injury can possibly arise from this simple operation, if it be any way carefully performed; but by employing it, much time, more suffering, and, this without risk, may be saved the patient. For though it has chanced to be the good luck of Mr. N. not to have witnessed "a case in which the unassisted efforts of nature have not terminated the labour in a favourable manner," yet it has not always fallen to the lot of others, to have seen such instances.

314. Indeed, Mr. N. indirectly confesses he has never seen the case for which we recommend interference; he consequently cannot be a competent judge of the necessity; he therefore should not condemn those for acting, who have been under the necessity to do so; especially, as he justifies the operation under the circumstances for which we direct it, in the following words: "But, however desirable it may be that the process of labour should not be improperly interfered with, it is equally necessary that we should not withhold our aid when it is really required. If it should happen that the uterine efforts do not gradually bring the os uteri into the direction of the axis of the inferior aperture, and that the head of the child is forced down by each pain, with the body of the uterus expanded over it, it would then be proper for the practitioner to endeavour to place the parts in a more favourable situation, by the practice recommended by Dr. Dewees." Now, this confession is all that is required; for we only direct interference in the precise case stated by Mr. N. I would ask, then, what is there to condemn, in what I have said upon this subject? for I have advised nothing, in which Mr. N. has not entirely acquiesced, by the concession in the last quoted sentence.

315. Within my own knowledge, this case has been mistaken for an occlusion of the os uteri; and upon consultation, it was determined, that the uterus should be cut through to make an artificial opening for the fœtus; they thought themselves justified in this opinion, first, by no os uteri being discoverable by the most diligent search; and secondly, by the head being about to engage under the arch of the pubes, covered by the womb; accordingly, the labia were separated, and the uterine tumour brought into view; an incision was made by a scalpel through

the whole length of the exposed tumour, down to the head of the child—the liquor amnii was evacuated, and in due course of time, the artificial opening was stretched sufficiently to give passage to the child; the woman recovered; and, to the disgrace of the accoucheurs who had attended her, was delivered, per vias naturales, of several children afterwards—a proof that the operation was most wantonly performed.

316. I have found, more than once, in cases of extreme anterior obliquity, that it is not sufficient for the restoration of the fundus, that the woman be merely placed upon the back: for we are also obliged to lift up, and by a properly adjusted towel or napkin, to support the pendulous belly, until the head shall occupy the inferior strait. To illustrate this, I will relate one of a number of similar cases, in which this plan was successfully employed. Mrs. O——, pregnant with her seventh child, after the seventh month was much afflicted with pain, and the other inconveniences, which almost always accompany this hanging of the uterus; and was obliged to wear the jacket recommended above, from which she experienced much relief. She was taken with labour pains on the morning of the 10th of October, 1820; I was not sent for until about noon—the pains were frequent and distressing, and, upon examination per vaginam, the mouth of the uterus was found near the projection of the sacrum, and dilated to about the size of a quarter of a dollar; it was pliant and soft; and during a pain, the membranes were found tense within the os uteri; but did not protrude beyond it.

317. As this was the first time I had been called to attend this patient, and the history she gave of her former labours represented the abdomen to be equally pendulous in each, with the exception of the first; I waited several hours, (the patient being on her left side,) for the accomplishment of the labour. During the whole of this period the head did not advance a single line, nor could it, as the direction of the parturient efforts carried it against the projection of the sacrum. I had several times taken occasion to recommend her being placed upon her back; but to this she constantly objected, until I urged its absolute necessity —she at length reluctantly consented. When upon her back, it was found that the os uteri was not sufficiently advanced towards the centre of the superior strait, the abdomen was, therefore, raised, and a long towel placed against it; and it was kept in this situation, by its extremities being firmly held by two assistants—at the same time I introduced a finger within the edge of the os

uteri, as directed above, (304,) and drew it towards the symphysis pubis, and then waited for the effects of a pain—one soon followed, and with such efficacy as to push the head completely into the inferior strait; and by three more, it was delivered. In this case I have every reason to believe, that many hours more would have passed without profit, had I not insisted upon the change of position; and, in my opinion, it most decidedly proves the importance of correct principles in the art of midwifery. See Baudelocque.

318. It might be considered as highly useful in such cases, that the woman lie as much as possible upon her back, even from the commencement of the labour, as it would certainly contribute to the restoration of the displaced uterus: it is, moreover, very important in such instances, that the bowels be opened either by some gentle medicine, or by an injection, that no accumulation of feces may take place in the rectum.

CHAPTER X.

OF THE TERM OF UTERO-GESTATION.

319. The time a fœtus resides in utero is not precisely determined by physiologists, even when the woman is placed under the most favourable circumstances for ascertaining it. It seems, however, from the best calculations that can be made, that nine calendar months, or forty weeks* approach the truth so nearly that we scarce need desire more accuracy, could it be obtained. There are unquestionably many causes which may provoke the uterus to contraction, before the full period of utero-gestation, or before it might take place spontaneously; there may also be some which may procrastinate the common period. The frequency of abortion, and the occasional occurrence of premature delivery, sufficiently prove the first; and the very much more

* We are certain that it would be more definite, if not more accurate, to specify the period of gestation by days, were this more practicable than the other method; but there must always be a starting place, and the uncertainty of that place, to start from, is just as uncertain, as when we enumerate by weeks or calculate by months.

rare, but, nevertheless, well authenticated instances of prolonged gestation, puts the latter almost beyond dispute. But of the latter I shall again have occasion to speak more at large, (325, &c.) Of the premature, however, I may remark, that I have known several instances where labour habitually occurred before the full period; with one lady it always happened at the seventh month; and in two others, it regularly took place at the eighth month of pregnancy. And of the protracted, I have known still more instances, where every circumstance and calculation rendered it nearly certain that the children were carried ten months, or even a little beyond it.

320. We have no certain mark to detect the instant at which conception takes place;* and consequently, we cannot ascertain, with absolute precision, the exact extent of time the fœtus resides in utero. The cessation of the menses, and quickening, are the most common foundations to calculate from; but these must necessarily be liable to considerable variation; since, perhaps, it is not erring greatly, to say that the woman is liable to conceive, at any part of the menstrual interval: and that she may quicken at various periods of gestation. It is generally supposed, however, that the most favourable instant is, immediately after the catamenial evacuation had ceased; perhaps, this is so, as a general rule; but it is certainly liable to exceptions. The uncertainty of the moment at which conception takes place, will always embarrass calculation; since a latitude of from two to three weeks must be permitted.

321. But opportunities have occurred where the utmost accuracy must have prevailed: one presented itself to my notice, many years ago. The husband of a lady who was obliged to absent himself many months, in consequence of the embarrassment of his affairs, returned one night clandestinely; his visit being only known to his wife, her mother, and myself. The consequence of this visit was the impregnation of his wife. The lady was at this time within a week of her menstrual period; and as this did

* There are many popular errors upon this subject, to which it may be well to say in contradiction of them, that our experience furnishes no certain mark, by which the moment conception takes place is to be distinguished. All appeals by the woman, to particular sensations experienced at the instant, should be very guardedly received; for we are certain they cannot be relied upon; for enjoyment and indifference are alike fallacious. Nor are certain nervous tremblings, nausea, palpitation of the heart, the sensation of something flowing from them during coition, &c., more to be relied upon.

not fail to take place, she was led to hope she had not suffered by the visit of her husband. But her catamenia not appearing at the next period, gave rise to fear, that she had not escaped; and the birth of a child, nine months and thirteen days from the time of this clandestine visit, proved her apprehensions too well grounded.

322. This case is remarkable for two facts: one, that a woman in perfect health, and pregnant with a healthy child, may exceed the period of nine months, by several days; the other is, that a woman may become impregnated just before her menstrual discharge is about to take place, and not have it interrupted—and also, it seems, that a check is not immediately given to the catamenial flow, by an ovum becoming impregnated. This fact has perhaps frequently obtained; or at least more frequently than is imagined, and has thus created no inconsiderable error in calculation. Desormeaux relates, that "a lady, the mother of three children, became insane. Her physician considered that child-bearing might have a beneficial influence on the mental disease, permitted the husband to visit her, under condition that it should be once only, and at the distance of three months, in order that if conception took place, there might not be a risk of abortion, from farther intercourse. The physician and attendants made an exact note of the time when the husband was permitted to visit his lady. When symptoms of pregnancy appeared, the visits were absolutely and totally discontinued. The patient was necessarily watched by the female attendants required for her malady, and was, moreover, a lady of the strictest principles of morality. She was delivered at the termination of nine solar months and a fortnight, of a *small* child, of which she was delivered by Desormeaux himself."*

323. As we are entirely unacquainted with the causes which excite contractions in the uterus for the purpose of expelling its contents at the expiration of nine months or thereabouts, so we remain ignorant of the conditions, both on the part of the uterus and of the child, to make these causes available—all we at present know upon the subject is, that it is an established law; but it is every way certain that this law arises from conditions, of which we are altogether uninformed.† As the period of incubation is immutable, in every particular species of birds, we have

* London Medical Gazette, Dec. 12, 1829, p. 344.

† See par. 325, and following.

some reason to believe, that the development of the fœtus has some agency in determining the period: but of this, we can say nothing positive, as so many apparent exceptions present themselves.

324. Many ingenious hypotheses have been proposed to explain this interesting phenomenon; but all of which fail to be satisfactory, from the existence of one fact—namely, that in cases of extra-uterine conceptions, the uterus, at the expiration of nine months, is as certainly thrown into painful contractions, of shorter or longer continuance, as if the fœtus had resided within its cavity. And to these we may add, that in the few cases of very extended gestation, the same thing has as constantly occurred, if these cases have been faithfully related; and as far as we can judge upon this subject, there does not appear to be any rational ground to suspect their fidelity. Now, these things being true, they must at once put to flight the ingenious speculations of the theorist.

325. Be the *exact* period when it may, sufficient has been ascertained to fix the common one, at about nine months; and in making calculations, it is always best to allow a little latitude beyond the time which the mere stopping of the menses would indicate; for as a general rule it will be found, that more women are impregnated, a few days after this evacuation, than at any other period.

326. We are aware that much doubt is entertained, and much wit has been expended, upon the testimony which accoucheurs give upon the absolute duration of human gestation; and especially since the discrepant evidence given by seventeen professional gentlemen, in the Gardner Peerage cause. But it should be borne in mind, that doubt is not proof; nor is wit, argument; consequently, neither should be permitted to have an undue influence. Yet we are disposed to grant, that all testimony that contravenes the general laws of nature in relation to this subject, should be admitted with great caution; and only after a strict examination.

327. For, were the plea of the possibility of an unusual extension of the term of utero-gestation made a common one, or admitted with too much facility, the consequences would be as extensive as mischievous. But this cannot very well happen under its present limitations; as public opinion, and supposed correct observation, are so inveterately fixed upon this point, that little danger can be apprehended from an occasional, and a well qualified admission of it.

328. Nature, for the most part, is pretty steady and uniform in her operations; and perhaps in none is she more so, than in her general schemes of impregnation. Yet it is notorious, even in this, her favourite process, that she is occasionally so vague, and sometimes so whimsical, that perhaps few instances exist of absolute uniformity. These remarks will apply with much force, to the subject in question, if any reliance may be placed upon circumstances purporting to be facts, or upon human testimony; or at least, as far as facts and testimony are concerned, with the events connected with impregnation, in the present state of society.

329. How much more uniform nature may be in her operations in savage life, we have no facts to direct us, which can be unhesitatingly received; nor would it perhaps be essential to the investigation of the present question, as it could not have a bearing upon the conduct of females in civilized life; though it would be confessedly curious, if not highly useful, to ascertain the degree of her uniformity, or the extent of her aberrations.

330. We have already confessed, that we are altogether ignorant of the natural cause which calls the uterine fibre into action at about the end of the ninth calendar month; so, we cannot deny but that the operation of this cause, be it what it may, can be suspended in some instances, either by a diminution of the force of the cause, or by some change in the disposition of the uterus itself, to be acted upon beyond the common or ordinary limit assigned for human gestation. That such departures from the general rule do take place from time to time, we have not the slightest doubt; and we believe this, with the more readiness, because it does not appear to be confined to the human species. For if we are to believe Tessier, he found as great departures from the ordinary rule, among several of the inferior animals to which his experiments were directed, as is declared to occur with the human female.

331. As the experiments of the naturalist just mentioned, are highly curious, and not very generally known, we will employ them in detail; and at the same time consider them as furnishing an argument from analogy, in favour of the opinion we are attempting to support.*

* Dr. Beck appears unwilling to make the conclusions of Tessier apply to human gestation: he says, "These facts certainly go to show that the period of gestation is irregular among animals, and should they be verified by succeeding observers, a strong argument from analogy will be furnished against its uniformity

332. "In five hundred and seventy-five cows, twenty-one calved between the two hundred and fortieth and two hundred and seventieth days, average two hundred and fifty-nine; five hundred and forty-four between the two hundred and seventieth and two hundred and ninety-ninth days, average two hundred and eighty-two; and ten between the two hundred and ninety-ninth and three hundred and twenty-first days, average three hundred and six; average of the whole, two hundred and eighty-two days; so that, from the shortest to the longest period, there is a difference of eighty-one days; that is, more than one-fourth of the average time."

333. "In two hundred and seventy-seven mares, with foal for the first time, twenty-three foaled between the two hundred and eighty-seventh and the three hundred and twenty-ninth days, average three hundred and twenty-two days; two hundred and twenty-six, between the three hundred and twenty-ninth and three hundred and sixtieth days; average three hundred and forty-six; and twenty-eight between the three hundred and sixtieth and four hundred and nineteenth days, average three hundred and seventy-two; average of the whole, three hundred and forty-seven days; difference between the extremes, one hundred and thirty-two days."

334. "In one hundred and seventy-mares which had foaled before, twenty-eight foaled between the two hundred and ninetieth and three hundred and twenty-ninth days; average three hundred and twenty-one; one hundred and twenty-eight between the three hundred and twenty-ninth and three hundred and sixtieth days; average three hundred and forty-one; and fourteen between the three hundred and sixtieth and three hundred and seventy-seven days; average three hundred and seventy; average of the whole, three hundred and forty-one days: so that between the shortest and the longest period there was a difference of ninety-seven days, more than one-fourth of the mean term."

335. "In nine hundred and twelve sheep, the mean time of gestation was about one hundred and fifty-one days, and the extreme difference only eleven days."

336. "In twenty-five swine, the extremes were from one hundred and nine to one hundred and thirty-three days."

in the human race. It must, however, be recollected, that, even if perfectly established, it is only a favourable, and not a decisive proof."—*Elements of Medical Jurisprudence*, Vol. I. p. 290.

337. "In one hundred and sixty-one rabbits, the extreme terms of gestation were from twenty-seven to thirty-five days."*

338. "Thus, we see in the brute a very considerable variety prevails in the terms of utero-gestation; and to which, immediate credence will be yielded. And though no moral question can arise from aberrations in them, they nevertheless furnish us with very interesting facts, from which most important deductions must be made in favour of the occasional extension of the terms of gestation in the human female.

339. In my mind the period of utero-gestation has no absolute period;† and I am of opinion that variations in the term of this process do and will constantly occur; since, so far as calculation and observation have gone, they are in direct opposition to the opinion, that the period of human gestation is governed by an immutable law.

340. I have almost entirely satisfied myself, that this process extended in one instance, (321,) thirteen days beyond nine entire calendar months; and I have had every evidence this side of absolute proof, that it has been prolonged to ten calendar months as an habitual arrangement, in at least four females that I have attended; that is, each of these women went one month longer than the calculations made, from an allowance of ten or twelve days after the cessation of the last menstrual period, and from the quickening which was fixed, at four months.

341. Besides, a case within a short period has occurred in this city, where the lady was not delivered for full ten months after the departure of her husband for Europe; yet so well, and so justly too, did this lady stand in public estimation, that there did not attach the slightest suspicion of a sinister cause.

342. We are fully aware, that all we have said, or could say, on this subject, would not amount to *legal proof*, that the period of utero-gestation may exceed by a considerable number of days, or even months, the ordinary term or the period of nine calendar months. Yet, we are certain, that a very different

* See Beck's Elements of Medical Jurisprudence.

† By this I would be understood to mean, that this process is not undeviatingly fixed to the lapse of an absolute number of days; and that the nearest we can approach is within a few days of nine months, one way or the other. It is every way probable, that certain conditions must obtain, before labour can take place; and these may depend upon some physiological harmonies which cannot always be exact: for the functions of no one organ in the human body are so regulated in themselves, as to be unerringly exact in their performance.

opinion would be formed out of a court, by the very gentlemen, who so ingeniously contrive within it, to create doubts upon this point; for we sincerely believe, that the question, when considered in the abstract only, would be determined in favour of the possibility of this extension.

343. To put this question entirely at rest, would require such a combination of precautions, and such peculiarity of experiment, as to make us believe they will never be executed by design; and we must feel how far from being satisfactory they would be, were they performed by chance. Therefore, at present, we can only rely upon such evidences as shall be afforded by females themselves, when examined upon the points which have a direct bearing upon the subject.

344. For the most part, in inquiring into this subject, we can have information but upon three points; namely, the time of cessation of the last menstrual period; the time of quickening; and the time of delivery; and upon the first two, it is confessed, the woman is apt to be rather vague. With a view, however, of arriving at some general and satisfactory conclusion, it might be well, that every obstetrical practitioner inquire of his patient, whenever his attendance is bespoke, for information on the first two points; to make a note of the answers he may receive; and after delivery has taken place, to faithfully record that event. In time, he will have accumulated sufficient data, to warrant a general average of the number of days occupied by gestation. But above all, he should note, especially in the married woman who may have no sinister object in the statements she makes, any remarkable circumstance, that may tend to fix the period of conception with more than usual precision. In an ample practice, such opportunities every now and then occur; and when they do, they should be looked upon as too valuable to be neglected, or to be only treasured in the memory. It will readily occur to the reader, how such occasions may present themselves.

345. I would not wish to be understood, in what has been said, as recommending too much facility of credence in the ipsa dixit of the woman; on the contrary, from the importance of the subject in every point of view, I would advise the utmost caution of investigation, especially with those who may have made up their minds upon either side of the question; for, agreeably to the old adage, "What we wish to be true, we can easily believe."

346. Dr. Beck, the ingenious and successful author of "Elements of Medical Jurisprudence," treats this subject with a le-

vity that almost amounts to ridicule. In this we were severely disappointed; for we had hoped more from him; as he has treated so many of his subjects with so masterly a hand. In our opinion, he dismisses this subject with much more brevity and despatch than its claims demand; and this without the use of a single argument, that can be called conclusive.

347. He says, "It is astonishing, and I will add, ridiculous, to view the ardour with which writers have advocated this doctrine" (of delayed gestation,) Vol. I. p. 292. We would ask why it is either astonishing or ridiculous, that writers should engage warmly in an inquiry, which involves so many important points as regard morals and property?

348. We admit, that the adoption of every history upon record purporting to be a case of extended gestation, would be absurd; or to approve of every decision of a court in favour of the woman, would certainly be sinning against our better judgment. Yet, we hold it would be every way unsatisfactory to the philosopher and the philanthropist who might be desirous of investigating this subject, to be told, by one of the best medical jurists of the age, that a calm and deliberate examination of these histories, (of extended gestation,) "must certainly lead to a total disbelief of the doctrine of protracted gestation," p. 298. And all this is said, without adducing opposing facts, or the employment of any apposite reasoning.

349. Because an occurence is rare, it should not be declared impossible, especially upon slight, or inadequate ground; for nothing is more common than the abuse of general rules. We do not hesitate to admit, there is a common, or a general period for the termination of gestation, in every class of the mammalia; and with the human female, that period is from forty to forty-one weeks; and this epoch forms the general rule. This being granted, the question must be upon the exception, if the exception exist; or in other words, we must inquire, can the term of gestation exceed the general period?

350. We must ask, first, do exceptions to the rule just stated, really exist? And secondly, if they do, we must try to ascertain to what extent this deviation in utero-gestation may have been extended.

351. First. All writers upon this subject, and even those who are unfavourable to the doctrine of protracted gestation, admit there may occasionally be a difference of from one to two weeks in the ordinary period assigned for this process. This being

granted, the question, by what law is this variation of period regulated, will naturally present itself. For, if the uterus fail to conform to the law by which it is said to be governed in the production of labour at the exact time fixed upon by some, there must be a cause for the aberration; and, if there be a cause for the aberration, we would ask, how is its limit to be determined? for the cause which is capable of suspending the regular display of uterine contraction for a week or a fortnight, beyond its prescribed time, may, upon certain occasions, be equal to prevent it for some time longer. How can we then pretend to fix a limit to the suspension, so long as we remain altogether ignorant of the governing cause, or of the condition of the uterus, which shall render the application of this cause available?

352. It is in vain to say, the thing cannot be, because we do not understand how it can be; or, because it appears to violate a law of the animal economy. This question cannot be settled by argument; facts, alone, must decide it, if it ever be put entirely to rest. We are, therefore, not disposed, from what we think we have ascertained upon this subject, to be seduced from the opinions we have formed, by the specious, or perhaps, more properly, the flippant conclusions of Louis; and, upon which, Dr. Beck seems willing to rest his cause, p. 297.

353. Dr. Beck says, that Louis, among other arguments, declares, first, "That the laws of nature on this subject are immutable." What are we to understand by this assertion? Is it, that the laws of nature are fixed, and without variation in the business of procreation? If they are, as regards the *term* of utero-gestation, it is the only point in which this exactitude exists in the whole work of generation; and for which it would be very difficult to assign an adequate reason; for, "nature works not by partial, but by general laws." It is, as far as we can determine, as special a law, that the fœtus be developed in the uterus, as that it shall not tarry there beyond nine months; yet we find exceptions to this, by its being discovered in the ovarium, tube, or abdomen. It is a special law, that the fœtus shall have a head, a heart, arms, or legs, yet we every now and then find one, deficient in one or more of these parts, &c. &c.

354. Second. "That the fœtus, at a fixed period, has received all the nourishment of which it is susceptible from the mother, and becomes, as it were, a foreign body." How is this proved? No proof is offered; there is nothing but a broad assertion, which is contradicted by almost daily experience, (if we are to under-

stand it as we believe Mons. Louis intended it should be, namely, that there is a definite and an invariable period, beyond which the fœtus cannot be nourished; or that the mother could not grant supplies,) if any reliance can be put upon human testimony; or upon facts, which we have indisputably witnessed in a number of instances. And if there be one single exception, this "immutable law of nature," as laid down by him, must fall to the ground.

355. Besides, the fœtus cannot be considered, "as it were, a foreign body," so long as it preserves its vitality, and its connexion with the uterus.

356. Third. "That married women are very liable to err in their calculations." Admitted; but it does not by any means follow, that there has been an error in calculation, in every instance purporting to be a case of protracted utero-gestation; consequently, until it be proved, that, agreeably to a law of nature, the uterus will not permit a fœtus to remain within its cavity, beyond a fixed and never-varying period, we have a right to believe, from both reasoning and observation, that the period commonly assigned, has been very considerably exceeded. See Cases I., II.

357. Fourth. "That the decisions of tribunals, in favour of protracted gestation, cannot overturn a physical law." This is also admitted; but let it be first proved, that protracted gestation and the decisions are at variance with a physical law, before it be considered as violated.

358. Fifth. "That the virtue of females in these cases, is a very uncertain guide for legal decisions." Here we are decidedly at issue; for the virtue of the female, in its absolute sense, and practice, is one of the most decisive evidences in favour of protracted gestation. And this must be admitted, by even our opponents; but to prevent the conclusion which would irresistibly follow from this concession, they deride its existence either directly or covertly, in every instance purporting to be a case of protracted gestation. For, on the one hand, Louis declares the virtue of females to be uncertain guides in legal decisions; and that married females are very liable to error in their calculations; while Dr. Beck more openly decides, that "a calm and deliberate examination of these histories, (of protracted gestation,) will lead to a total disbelief of the doctrine of protracted gestation.*

* Dr. Beck relates the following histories; we have abridged them, but without losing the material points.

There are many," he continues, "that evidently bear the impress of vice, while the most favourable are so liable to have arisen in error, that skepticism must appear unavoidable," p. 298.

"Bartholin says a young woman declared herself to have been seduced: she was strictly guarded after this, and was delivered, sixteen months after of a living child." Foderé, Vol. 2. p. 183.

"In 1638, a woman was delivered of a child, one year and thirteen days after the death of her husband. She suffered with severe labour pains one month previously. The child's head was without fontanelles. The faculty of Leipsic declared it to be legitimate." Valentin's Pandects, Vol. 1. p. 142.

"A man died on the 2d of December, 1687, after being eight days *in extremis;* 16th of October following his wife was delivered of a son. The faculty of Geissen declared it to be legitimate." Ibid.

"Le Seur was struck with apoplexy, May 14th, 1671, and died on the 16th. His wife had not been pregnant during the six years of their marriage. On the 11th of the succeeding September she declared herself pregnant, and on the 17th of April, 1672, (eleven months and four days after his illness,) she was delivered of a son. The relatives of the husband contested its legitimacy, and obtained a decree in their favour, but on appealing to the parliament of Rouen, the cause was decided in favour of the widow, on the score of the goodness of character, and on the possibility of protracted gestation. The following case is related by Heister:—A woman was delivered thirteen months after the death of her husband; the individuals interested were about to contest the legitimacy of the child, but were deterred from it by the excellence of her character. So convinced was one Christopher Misnerus, who had acted as shopkeeper during her widowhood, that he married her shortly after, and had two children by her, and each of them was born after a gestation of thirteen months."

"Dulignac testified that his wife with two children went thirteen months and a half, and with a third eleven months. La Cloture also gave an opinion in favour of the widow, and quoted several similar cases from his own observation."

"Charles ———, aged upwards of seventy-two years, married Renée, aged thirty years. They were married nearly four years without having issue. On the 7th of October, 1762, he was seized with fever, and violent oppression, which remained until his death. The last symptoms were so severe, that he was forced to sit in his bed, nor could he move without assistance. In addition to these, he was seized with dry gangrene of the leg on the 21st, and with this accumulation of disease he gradually sunk, and died on the 17th of November, aged seventy-six years. Renée had not slept in the chamber during his illness; but about three and a half months after his death she suggested that she was pregnant, and on the 3d of October, 1763, (within four days of a year since the illness of her husband, and ten months and seventeen days after his death,) she was delivered of a healthy, well-formed, and full-sized child. The opinion of Louis was asked in this case, and he declared the offspring was illegitimate."

The above cases, notwithstanding Dr. Beck's skepticism, appear, (with the exception of the last,) to be well-attested instances of prolonged gestation. The first case, from Bartholin, is particularly in point, and well worthy of consideration. To us, it appears a little sturdy on the part of Dr. Beck, not to have given

"This reasoning," says Dr. Beck, "appears to me to carry great weight, and Mahon, in his chapter on this subject, adds several sensible remarks in confirmation of it. He observes, that 'if the doctrine be true, that the children of old people are longer in coming to maturity, it would have been confirmed by experience, which it is not.'" Now, we cannot perceive any thing very profound in this observation; on the contrary, we think it is marked by much oversight—for it is contended, by the opposers of the doctrine of protracted gestation, that there is no absolute certainty of the moment at which conception takes place, as the stopping of the menses is not a guide; or, at what period the woman may quicken, as that differs in different women, and at different times in the same woman; consequently, there may be much error in their calculations; yet, with no better data, Mahon insists, that "if the doctrine be true, that the children of old people are longer in coming to maturity, it would have been confirmed by experience."

359. We would ask, how could this have been confirmed by experience, if they would not rely upon the only data they could possess? For the same objections must attach to the means, and mode of calculation, in both instances; and if they be rejected in one case, they must in the other.

360. "Grief also, and the depressing passions, are much relied upon, as possessing a delaying power; but certainly these are more apt to produce abortion, than protracted gestation." We do not know the fact, but we are persuaded from these last observations, that Mahon was not an accoucheur of experience;

a little more credit to the cases and authorities he has so liberally quoted. Had he done so, it might have saved the expression of contempt for those who differ in opinion with him in this point, contained in the following advice to them. "I recommend to those who intend embracing the doctrines of protracted gestation, an examination of the following case. If they can satisfy their minds respecting it, all difficulties on this subject will vanish. The husband had been absent four years, at the end of which period, the wife brought forth a child. She pleaded that her conception had taken place through the force of imagination alone—'ut mulier per fortem imaginationem putaverit, se in insomniis rem habuisse cum marito, atque sic concepisse.' The parliament of Grenoble, to whom this case was referred, declared the offspring legitimate."—*Metzger, p.* 416. *Schlegel,* Vol. 2, p. 148.

Had Dr. Beck confined his ridicule to the above, and a few other cases, almost as preposterous and incredible, we should have been better pleased with his mode of treating this subject: for it is not into the truth of such stories that we mean to inquire; nor from such vague testimony, that we mean to draw our inferences.

for had he been extensively engaged in the practice of midwifery, he could not have failed to observe that "grief and the depressing passions," have "a delaying power;" and that they do not dispose to abortion. Passions and emotions of the mind have this tendency when in excess; but "grief and the depressing passions," have not. On the contrary, it is in strict conformity with our experience in a considerable number of cases, that they have a delaying influence.

361. "That the menses in married women may be suppressed not only from disease, but from affections of the mind, or accidental causes, which do not immediately impair the health, while the increase of volume in the abdomen may originate from this, or from numerous other causes.

362. We have admitted, that the disappearance of the menses, is by no means to be exclusively relied upon; but when the stoppage shall correspond with the period of quickening, a pretty near estimate may be formed. And it may be proper to observe, that when the menstrual discharges fail in the married woman, hitherto healthy and regular, the presumption, that it is arrested by pregnancy, is strengthened; especially, as when this happens from either disease, or "affections of the mind," it is rare for impregnation to take place during the continuance of the suppression.

363. "If this doctrine be allowed, how shall we distinguish a delayed child from one that is born at nine months; and by what means are we to detect fraud in such cases?"

364. With the difficulties which may be presented to the medical jurist by these cases, we have nothing to do. In our opinion, the fact of prolonged gestation is established beyond controversy; and this being so, it rests with those who have the settlement of the question, to find out the respective marks, which may distinguish each case.

365. "Certainly, as far as we can judge from the narratives given, the infants born after protracted gestation, were not distinguished for size, or other appearances of maturity."

366. This declaration is at least at variance with the opinions of Mauriceau, Lamotte, and Orfila; as well as with that of Dr. Hopkins, who gave evidence in the Gardner Peerage cause. See "Minutes of the Medical Evidence," &c., by Dr. Lyall, p. 71.

367. And were "the infants born after protracted gestation not distinguished by size or other appearances," it would not

militate in the slightest degree against the doctrine; as we are of opinion, that the tardy development of the fœtus may be one of the causes of delayed gestation.

368. We were at one period opposed to the doctrine of protracted gestation; for we had adopted that of the immutable nature of this operation, as regarded duration. But the case already referred to, (321,) convinced us that the period of nine calendar months could certainly be exceeded by at least thirteen days. This led us to a careful investigation of the subject, and which has resulted in the entire belief, that the commonly fixed period may be extended from thirteen days to six weeks, under the influence of certain causes or peculiarities of constitution.

369. Nor do we feel disposed to abandon this opinion, by all the ridicule which has been heaped upon it; nor from the apprehension that our cherishing it will have the slightest tendency to subvert good morals, or to offer inducements to the wicked and designing, to practise upon either the credulity of husbands, or the good faith of friends. The checks to impositions of this kind are both certain and numerous; and they would not fail to be employed against the attempt.

370. We have upon record several remarkable histories of modern date; in addition to those already noticed, which seem to establish beyond doubt, that human utero-gestation may very much exceed nine calendar months. And as they are not within general reach, it may be acceptable to the reader to have them presented.

371. Case I. A woman, aged twenty-seven years, though much emaciated and very weak, in the month of October, 1820, had all the symptoms of pregnancy. About the middle of the fifth month she began to feel the motions of the child, and at the end of the ninth felt the precursory pains of labour. The surgeon, who was called, found the pains weak, and the os uteri not much dilated, though sufficiently so to allow him to feel that the vertex presented. In consequence of the extreme weakness of the patient, she was treated with permanent and diffusible stimuli, and with so much advantage, that at the end of six weeks she had regained the appearances of health, and had returned to her ordinary occupations.

372. A few days after the coming on of the pains, the motions of the child became weaker, and eventually ceased. The size of the belly diminished, and the child appeared turned to the left

side. The menses appeared in the tenth month, and returned regularly afterwards. In December, 1821, Mr. Penker was called into consultation, and advised forcible delivery, which was not consented to. In October, 1822, he found the os uteri above the symphysis pubis, inclined obliquely half an inch to the right side, with the fundus to the left.

373. The posterior surface of the uterus had descended so low in the pelvis, as not to be more than an inch and a half from the orifice of the vagina; and was not thicker than a double sheet of paper. The back and feet of the child could be felt through the abdomen. Such was the state of the patient in March, 1823; up to which time, she had refused to submit to any operation. The relator of this case promises the sequel at some future time.

374. The translator of the above history has favoured us with the following remarks upon it. "Although this case is described as a uterine pregnancy, there are some circumstances connected with it, sufficient to suggest a doubt on that point. If not extra-uterine, there is every probability, that it is an instance of retroversion, continuing through the whole period of pregnancy, an occurrence often mistaken for the real extra-uterine case, as has been fully proved by Dr. Merriman in his ingenious essay on that subject."

375. It would have afforded us much pleasure, and perhaps equal instruction, had the "translator" favoured us with the points of resemblance between this case and an extra-uterine conception; or, between it and a "case of retroversion continuing through the whole period of pregnancy." For as regards ourselves, we do not see the slightest resemblance to either of his supposed cases.

376. It could not have been an extra-uterine case, because we are distinctly told, that "the os uteri was not much dilated, though sufficiently so as to permit him, (the attendant,) to ascertain that the vertex presented." That settles this part of the question.

377. As regards its resemblance to a case of retroversion at full time, it is equally out of the question. 1st. Because, up to the ninth month, there is no symptom recorded, that would lead to the suspicion that this accident had taken place. 2d. Because, up to this period, the os uteri is not said to have been out of its natural or ordinary situation; on the contrary, it is distinctly stated that the attendant was able to pass a finger into, and to

determine it was a vertex presentation. 3d. Because there is no mention made of a tumour occupying the posterior and inferior portion of the pelvis; nor a single symptom to lead to the suspicion of such a case, even after the ninth month.

378. We are told that the patient had been "weak and much emaciated;" but was relieved of both, by the use of stimulants; is it probable that stimulants would have improved the condition of a patient who was labouring under a permanent retroversion of the uterus? The only circumstance in the history of this case which could lead to the supposition of its being one of retroverted uterus, was, that Mr. Penker found the os uteri above the symphysis pubis; but this was twelve months after labour-pains had appeared and ceased, and nearly as long after the quiescence, if not the death of the child.

379. Again, Mr. Penker speaks of the *posterior surface of the uterus* being no thicker than a double sheet of paper. If it were a retroversion of the uterus, how could Mr. Penker have felt it? and especially as this part is represented to be so much stretched by the head of the child. For this part must be behind the vagina in a case of retroversion. Moreover, he expressly states, that the head of the child had descended very low in the pelvis, and but an inch and a half from the os externum.

380. Were this even admitted to be a case of retroversion, it could only have become so after the death of the child, and after the belly had diminished in size. But to put this question to rest at once, we are told that "the back and feet of the child could be felt through the abdomen." Now, it is impossible that these circumstances could obtain, and be a case of retroversion at the same time. Indeed, we are inclined to believe that Dr. Merriman himself, in a subsequent edition of his work, will not select this case, to support his hypothesis. See Essays on various Subjects connected with Midwifery, by the author; in which he has ventured to offer strictures upon Dr. Merriman's opinion on this point, p. 291.

381. Since the above was written, we have met with the history of a case, so analogous to the one just related, and which dissection proved to be a uterine pregnancy, as to leave no doubts upon our minds, that the case of Mr. Penker was one of a similar kind. This case is one of great interest; inasmuch, as it shows the very extraordinary indifference of the uterus at times to foreign bodies within its cavity, (for we must look upon the child and its appendages as such, after they have parted with

their vitality,) after it has made unsuccessful attempts for their removal at the last period of utero-gestation. We will relate the case as concisely as will be consistent with its importance.

382. Mrs. A. H., aged twenty-nine years, became pregnant about the first of April, 1822. She was much afflicted at various periods of gestation, with spasms of the stomach and vomiting. She quickened at about the fourth month. After this period, her spasms, &c. were less severe; but new evils supervened; such as pains in the hips, loins, back, &c. About two weeks before the expected period of labour, she was attacked with the usual symptoms of this process. These continued for ten hours, and then subsided; from this time no motion of the child was felt.

383. 1822. "March 1st.—She was attacked with phlegmasia alba dolens, in one limb. The disease, having left this, soon seized upon the other. During the first and second week of this attack, she had a discharge from the vagina, resembling the catamenia. At times this was fetid; the os uteri was closed; no portion of the child could be felt. The abdomen very tense.

384. "About the 20th of March, she began to recover; and soon was able to walk some distance without fatigue. From the 1st of April, convalescence was rapid. The tumefaction of the abdomen began to subside; she appeared to be as large as at the seventh month.

385. "June 10.—Catamenia; health good; farther subsidence of the abdomen. November, 1823.—Nothing remarkable occurred up to this time. Abdomen nearly to its natural size. A small tumour of the shape and size of a child's head remains. Two weeks after the supposed death of the child, milk was secreted, and continued in small quantities until October.

386. "April 10th, 1824.—She was attacked with pain, vomiting, cough, &c., and continued in this way until the 24th of May, when she died.

387. *Dissection.*—"Upon opening the abdomen, the uterus was discovered to be very much thickened, and presented the appearance of having been inflamed, and to have suppurated. It adhered closely to all the surrounding parts and organs. Anteriorly, it was united intimately with the peritoneum, and in this way with the abdominal parietes. An incision was made through the anterior face of the uterus and a full-grown fœtus was discovered." New England Journal, No. III. Vol. XIV.

388. It would be difficult, perhaps, to find two cases so strongly resembling each other in most of their leading and material points,

as these just related; and the latter most satisfactorily proves, that a uterine pregnancy may continue very much beyond the ordinary period assigned for gestation. In this case, as well as the former, the material points were substantially the same.

389. First. At the usual period for gestation to terminate, labour pains commenced, and continued unavailingly for some time.

390. Second. In neither case were the pains renewed, after the first attempt was made by the uterus to relieve itself; and the motion of the children ceased about the same period.

391. Third. There was a regular return of the catamenia in both instances, some time after the cessation of pain, and in both, an amendment of health after this period, for a certain duration.

392. Fourth. In both instances, the abdomen gradually diminished in size; but in one, a tumour resembling in feeling and in size a child's head, was perceived through the abdominal parietes; in the other the back and feet of the child were to be felt.

393. Now, in the latter case, there was full as much reason for considering it an instance of extra-uterine pregnancy, or a retroversion continuing until full time, as the other; and would have been so looked upon, perhaps, by the gentleman who translated the former case, had not dissection settled the point.

394. How the first cause may eventuate we can only conjecture; it may end with safety to the woman, should the uterus so far regain its natural susceptibilities and powers, so as to throw its contents off per vias naturales; or inflammation may ensue, and the uterus discharge itself by ulceration; or, in case the system is not able to institute this process, she may die, like the woman in case second, of inflammation, and general irritation of the system.

395. In our opinion, these cases offer irrefragable evidence, that the uterus may remain quiescent, for a long period after the termination of the ninth month; and though we acknowledge them both to be extreme cases, they nevertheless prove the fact contended for.

CHAPTER XI.

CAUSE OF LABOUR.

396. Avicenna, centuries ago, declared that labour was a law of God, and that it came on at the appointed time. I would ask,

has any hypothesis since that period, enlightened us more upon this subject, than the humble confession of this honest old man? Ingenuity has attempted much upon this subject; but each suggestion has been displaced to give room to another, which like its predecessor was to be crowded out by some newer speculation. Thus, Harvey and others supposed that the stirrings of the fœtus itself contributed to the production of labour, and that it had much agency in its own deliverance; but it had often been proved, that labour was sometimes prematurely induced by the death of the fœtus; and that in many instances, delivery was more rapid, with a dead than with a living child.

397. Others have declared, that the desire of the fœtus to have food, and to breathe, were the causes of the first contractions of the uterus; but the force of both these conjectures are completely destroyed by the argument just adduced. The liquor amnii, it has been said, becomes acrid towards the latter period of gestation, and by its stimulus forces the womb to labour. But no such change in the quality of this fluid has ever been shown; and as it cannot come in contact with the immediate surface of the uterus, in consequence of the interposition of the membranes, no faith can be placed upon this conjecture, were it even proved that the waters of the amnion had become acrid.

398. The explanation of Baudelocque is very much more plausible, and better supported. He makes it consist in a kind of mechanical necessity; he is of opinion that the body and fundus, by their persevering, alternate contractions, especially after the sixth month, oblige the neck of the uterus to unfold; and the same agency, together with the weight of the child, constrain the os uteri to open, and labour to take place. This hypothesis has some important facts to sustain it; for the action spoken of really exists; and after it has commenced, the neck of the uterus gradually expands; and is eventually obliterated, and labour ensues: but a number of facts, in which this change did not, nor could not take place, destroy much of the force of this ingenious suggestion: thus, labour comes on spontaneously in some females at the seventh, and others at the eighth month of pregnancy, while others abort at certain periods, without any evident cause.

399. The latest explanation we have seen, is that of Mr. Power, which may be looked upon as a slight modification of that of Baudelocque's; both being strictly mechanical; and the agent, the wedge. Mr. Power says,* "When the state of dilata-

* Treatise on Midwifery, &c. p. 27.

tion has proceeded so far that the os uteri is opened to the size of *a shilling, or more*, a portion of the adjoining membranes begin to be protruded through it; the effect of the paroxysm now impels upon them a quantity of the liquor amnii, by which they become distended into a roundish tense bag, resembling a portion of a blown bladder, filling up the orifice, and at the same time, pressing forcibly upon it, *on the principle of a wedge*, so as to promote the dilatation; this, which is called the gathering of the waters, is of much utility in the process, as instead of the hard head of the child, it offers a soft, regular, and easy medium, by which the dilatation is effected. In proportion as it advances, the size of the membranous bag increases, until at length the os uteri is fully opened."

400. We will now examine this opinion a little in detail: First, it is stated, that "*when the state of dilatation has proceeded so far that the os uteri is opened to the size of a shilling or more, a portion of the adjoining membranes begin to be protruded through it*," *&c.;* which membranes are eventually, by being impelled by the contractions of the uterus, to effect the complete dilatation. Secondly, that these distended membranes, "resembling a portion of a blown bladder, fill up the orifice, and at the same time press forcibly upon it, '*on the principle of the wedge*,' so as to promote the dilatation." Thirdly, It is declared that the os uteri is filled up by the distended membranes.

401. It is evident at first sight, that the scheme proposed by Mr. Power, for the dilatation of the os uteri, requires the agency of two distinct and widely differing powers for its completion, (though he acknowledges but one;) namely, one, which shall open the orifice "to the size of *a shilling, or more;*" and a second, (which is entirely mechanical,) to complete the expansion; the latter consists of the distended membranes, which are to enter the os uteri on the principle of the wedge, and so promote the dilatation.

402. Now, from all that Mr. Power says after this exposition, of the manner in which the os uteri becomes expanded, it is evident that he intended, a mechanical power should be considered as the sole and efficient cause of this phenomenon. This being the case, we would inquire, by what influence or power was the os uteri first dilated to "the size of *a shilling, or more?*" It could not have been by the distended membranes; for Mr. P. declares that this does not take place until after this degree of opening has been effected.

403. Is it not then probable, that the uterus possesses some organic power by which it effects the opening of the os uteri, and which is totally independent of the mechanical influence of the distended membranes, since a certain degree of dilatation takes place, without their agency? And if this be true in part, as is admitted by Mr. P., may it not be capable of effecting the entire expansion of this part? We certainly think so; and in our chapter "On Labour," in the section treating of the manner in which the os uteri becomes opened, we have given our views upon this subject, and to which we beg to refer the reader.

404. Indeed, Mr. P. himself, immediately after declaring the necessity and efficiency of the distended membranes to produce the dilatation of the os uteri, goes on to say, "In proportion as it advances, (the dilatation of the os uteri,) the size of the membranous bag increases, until at length the os uteri is fully opened." By this admission, the order of cause and effect are reversed; above, we are told that the distended membranes enter the os uteri after it is opened to the size of *a shilling, or more*, and on the principle of a wedge, effect its enlargement; immediately below we are informed, that the size of the membranous bag increases in proportion to the dilatation of the os uteri.

405. In the first instance, the extent of dilatation of the os uteri is in proportion to the size of "the roundish tense bag;" in the next, the size of the membranous bag is commensurate with the expansion of the mouth of the uterus: now, the membranous bag cannot be both active and passive at the same instant.

406. Besides, Mr. P. makes the uterus perform a work of supererogation in effecting the opening of its mouth. For agreeably to him, as we have shown above, the active agent in the production of this effect is the mechanical influence of the distended membranes against the orifice of the womb in the time of pain; yet he informs us with a commendable candour, though not intended as a concession, that "as the paroxysm comes on, the orifice begins to acquire a tense and constricted feel, its internal rim becomes more perfectly circular, fixed and incapable of being moved *laterally* by the action of the finger." It is evident, therefore, if Mr. P's. explanation be the true one, that nature is at variance with herself; a circumstance that very few will admit, when she is performing the ordinary functions of the system.

407. Agreeably to this scheme, the fundus and body of the

uterus contract with the effect of pressing the presenting part against the orificium uteri, that it may be expanded sufficiently to permit the child to pass; but this intention is effectually frustrated by the perverseness of the os uteri. For instead of yielding kindly to the impulse of the fundus and body, as we suppose it should do under such circumstances, it opposes their efforts, by becoming tense, and constricted, and thus, at once defeating the very object of the "parturient paroxysm." Now, we admit that this really does take place; that it is continued for some time; and that it is attended by these very circumstances. But after a longer or shorter time, the orifice of the uterus is found dilated, and this without the mechanical aid of the distended membranes; for under the best condition of this part it is found fully expanded without the membranous bag (however tense this may be) engaging in its circle; consequently, without its being directly, and physically acting within this circle, like a wedge.

408. It must be evident, if the distended membranes are to act upon the principle of the wedge, they must be, for this purpose, in complete possession of the uterine circle; and if placed thus they must, (cæteris paribus,) stretch it quaqua versum, and thus, tend to thicken the edges, by making them encroach upon the portions of the neck of the uterus, not dilated; but this never, or but very rarely, takes place.* Now, it is familiarly known to almost every obstetric practitioner, that when the os uturi is about to yield in its kindest manner, that nearly the whole of that portion, which in the unimpregnated state constitutes the neck, becomes by the continuance of labour, thinner and thinner; and especially at that part which constitutes its mouth, until at last it becomes so attenuated, and, as it were, so paralyzed, that it discontinues its opposition, and fully dilates itself; and all this happens without the agency of the membranes; or, (if they be ruptured,) the presenting part engaging in the circle of its retiring edges; unless it be after the os uteri has become fully dilated.†

* See Chapter "On Labour."

† That is, agreeably to our view of the subject, the circular fibres of the neck and mouth of the uterus, *relax themselves*, by a law of the uterus; and thus give to the longitudinal fibres the control: for by the contraction of the latter, the uterus becomes shorter, and consequently will widen itself at its opening, by drawing the circular fibres upwards. When this happens, the mouth of the uterus is drawn, or has a tendency to be drawn upwards, and the presenting part escapes from it—hence, after the complete expansion of the os uteri, its margin is often not to be found; but when it is not retracted, it advances before the head of the child; and though every way disposed to dilate fully, or yield to the pass-

409. Again, Mr. P. tells us, that the "parturient paroxysm, obliges the presenting part to approach nearer to the external orifice, with a degree of force which the finger is incapable of resisting, and by which the orifice is often *sensibly enlarged.* A few lines above, and in the same paragraph, he declares, as we have just stated, that this part, in consequence of the paroxysm, "acquires a tense and constricted feel, its rim becomes more perfectly circular, fixed, and incapable of being moved laterally by the action of the finger."

410. Notwithstanding these declarations, Mr. P. will have us believe, that the (generally) frail membranes, will overcome a resistance, which the united efforts of the body and fundus, and an introduced finger is incapable of; for the membranes effect, agreeably to him, the dilatation of the os uteri by their presence within its circle. Now, it must be evident that they cannot do this, even according to his own showing, without exerting a force upon the uterine mouth, superior to the resistance with which this part maintains its contraction; and this is acknowledged by him to be more then equal to any degree of force that the finger could exert in order to move it laterally.* Is it for a moment to be believed, that these membranes can exert such a degree of force? But to put this subject at rest; we have attempted to show, in the section above referred to, that the most entire dilatation of the os uteri takes place without the intervention of the distended membranes, or even of the presenting part. And Mr. P. must have met with similar cases in his own practice.

411. Having premised the above explanation, and the effect of the "expulsive or parturient action," Mr. P. proceeds to the consideration of the nature and cause of the parturient action." Under this head, Mr. P. offers a new, and certainly, an ingenious hypothesis: which it becomes our duty to examine, lest it be too easily admitted as true.

412. Mr. P. commences his subject, by an unnecessary endeavour to prove the muscularity of the uterus, and that its action is similar to that of other muscles. He next informs us, that this

ing head, it often remains in that situation, so as to become a cause of tedious or difficult labour. See chapter on Tedious Labour.

* We are not certain that we have arrived at the exact meaning of the word "laterally," as employed by Mr. P. We presume, however, that he intends to convey the idea, that the os uteri cannot be stretched by an introduced finger in that direction, during the "parturient paroxysm," or, in other words, that at this time it maintains its "constriction" with an obstinacy, that is not to be subdued by any safe degree of force that could be applied by the finger.

organ is liberally supplied with nerves from several sources; and, that the neck of the uterus is, in an especial manner, furnished with them; and hence the great sensibility, upon which he grounds his hypothesis.

413. He declares the uterus to be disposed to expel its contents during the whole term of utero-gestation, whenever a sufficient exciting cause is applied; and that this disposition is inherent, and not adventitiously acquired during pregnancy. He then asks, "What is then the nature of that exciting cause, which in parturition determines the uterine muscles to these efforts at so exact a period?" p. 33. He contends that "the exciting cause, although acting upon the susceptibility of the uterus to receive its impressions, does not appear innate in the uterus itself, but probably consists of some principle, externally or mechanically applied to it," p. 34.

414. He attempts to support these opinions, by ingeniously employing analogies furnished by the actions of the rectum and bladder; and being thus strengthened, as he believes, he proceeds to a more detailed exposition of the modus operandi of the causes which act upon these peculiar susceptibilities of the uterus.

415. "It has been observed, that a regular series of change takes place in the cervix of the uterus during the latter months, which only becomes completed at the end of gestation, and immediately before the commencement of parturition. This change has been stated to consist of a gradual opening, or expansion of the cervix; during the earlier parts of gestation, the uterine contents are at a distance from its orifice; but, as the expansion proceeds, they gradually approximate: when it is completed, they are contiguous, and the process of expulsion soon succeeds. A strong analogy may be here observed, with the case of fecal evacuation, in which a gradual progress takes place of the fecal contents towards the sphincter, and in which also the ready disposition to contract is proportionate to that progress; and is most perfect when they are contiguous." In order to understand this analogy, we must relate Mr. P's. notions of this act. He considers the rectum as a mere receptacle for the feces, with which it becomes gradually filled; "the first portions of which enter the rectum, and occupy the farthest extremity," (that is, the upper portion of this gut,) "but as each successive portion is received, the former one is protruded forward by the impulse from behind, assisted by the contractile power of the part, until it eventually

arrives at the anterior extremity or sphincter: in proportion, as the accumulation takes place at this point, a stimulating effect is produced upon it, the irritation of which is at length followed by the action of the muscular coat of the rectum, which presses forcibly upon the feces, and expels them," p. 34.

416. Between the illustration just given, and the exciting cause of labour as stated by Mr. P., we do not perceive the slightest analogy; nor can any exist if Mr. P's. explanation be right, and for the following reasons: First, Because the relaxation of the sphincter ani which precedes the expulsion of the feces, is an act of the will; for, from the constant tendency of the rectum to become distended, it requires, that the excrementitious part of the food should be occasionally carried off; and this is done whenever the rectum is filled; for the irritation occasioned by its distention advertises the individual of the necessity of its being emptied; he wills that this should take place; in obedience to which, the sphincter ani is relaxed; the effect of expulsion follows; and the rectum is relieved of its contents.*

417. Secondly, Because Mr. P. makes the opening of the os uteri to depend upon mechanical force, whereas the sphincter ani requires no such force, to call the auxiliary powers concerned in the discharge of the feces into action. The "irritation" which calls the attention of the will, (if we may so term it,) to this act, does not necessarily reside in the rectum; or rather on the verge of the sphincter ani; for it is often seated in the stomach, more frequently in the bowels, and sometimes only in the imagination.

418. Thirdly, Because we do not find this "irritation" always produced by the presence of a large quantity, of even indurated, (and as it would seem more highly stimulating from their mechanical properties,) feces; as in constipation.

419. Fourthly, Because some of the most violent, tormenting, and frequent discharges from the rectum, are not caused by the

* It is true that the relaxation of the sphincter ani is not always in obedience to the will; and may, when this happens, be considered as militating against this objection; but this it surely does not do, under the point of view this subject is examined—for when involuntary discharges take place, the parts both directly and indirectly concerned in the operation, are labouring under disease: consequently, must not be looked upon as illustrative of a healthy or normal action. The brain may be so disordered, that the will cannot act; or the sphincter may be so morbidly irritable, as not to be under its control; or the actions associated with the irritations of the rectum may be so susceptible of impressions as to force the sphincter to obedience.

presence of feces in this gut; as in tenesmus, or dysentery; nor is distention necessary always to the relaxation of the sphincter ani; as we see in diarrhœa.

420. Fifthly, Because Mr. P. makes the opening of the os uteri to consist in a mechanical stretching; but the opening of the sphincter ani is a functional act; namely, the relaxation of a muscular band, and subject to the control of the will.

421. Sixthly, Because Mr. P. confesses that there is a consciousness of the presence of some irritating substance applied to the sphincter; for, he says, "that during the earlier periods of accumulation, no disposition to expulsion is perceived; and in the latter period, when the sensation of want of expulsion comes on, it is always referred to the sphincter." Now, it is known to every body, that at neither the commencement of labour, nor during any period of its progress, is any sensation experienced at the sphincter of the uterus; nor can any woman will its relaxation or contraction.

422. The same arguments may be employed against his other analogy; namely, the filling of the bladder, and the extrusion of the urine, as it is founded upon the same principle, and derives support from similar phenomena.

423. Having first given Mr. P's. views of the manner in which the os uteri becomes expanded, we will proceed to examine the principles on which he predicates, "the nature and cause of parturient action."

424. Mr. P., after briefly relating the order of changes in the development of the uterus, up to the commencement of parturition, says, "During the earlier months of pregnancy, the uterine contents are at a distance from its orifice; as the expansion proceeds, they gradually approximate; when it is completed they are contiguous, and the process of expulsion soon succeeds. A strong analogy may be here observed with the case of fecal evacuation just noticed, in which a gradual progress takes place of the fecal contents towards the sphincter, and in which also the ready disposition to contract is proportionate to that progress; as is most perfect when they are contiguous; but the analogy does not rest here, as it may be shown that the nervous structure connected with their respective organs, are not only similar, but derived from the same origin, both being supplied with nerves from the hypogastric trunk, of which one division is expended upon the rectum and its sphincter, the other upon

the uterus and vagina. Is it not reasonable to suppose this similarity of structure to be attended with similarity of action, particularly when we do know, that their functions are correspondent, viz. to exclude the contents of their respective organs?

425. "We have hence strong analogy to prove that the contractions of the uterus are produced, in consequence of a certain impression excited by its contents upon its orifice. We shall inquire how far circumstances, connected with the structure and actions of the uterus, confirm the position.

426. "It has been admitted that different parts of the uterus are possessed of different states of sensibility, and that its orifice is most highly charged: upon whatever ground the admission has been founded, it is confirmed and illustrated by anatomical observation. We have seen it supplied with nerves from the renal plexus, the spermatics, and the hypogastric nerves; the two former, which are chiefly derived from the sympathetic plexus, supply the upper parts of the uterus, ovaria, &c., and may be considered as the chief media of their communications with the general system, or of their sympathetic actions; the latter, though not devoid of connexion with the sympathetic nerves, is principally formed from the spinal nerves, which are more peculiarly nerves of motion; it may be considered the chief nerve of the uterus and vagina, upon every part of which the largest part of it is expended, the lesser one, as before noticed, supplying the rectum; it, however, passes more directly and largely to the os tincæ and adjoining parts.

427. "It may hence be inferred, that the orifice of the uterus possesses a high state of nervous power, and consequently a peculiar function. It has also been observed that this part becomes little connected with utero-gestation until that office is complete, being previously removed to a determinate distance from the distending process. Is it not, therefore, reasonable to consider that its peculiar function, so far as it is connected with a high state of sensibility, is to give warning of the task of utero-gestation being performed, and to be the medium of calling into action the powers which are appointed to produce the expulsion of the now mature fœtus?" p. 36, &c.

428. From what has been just said, it appears that Mr. P. insists upon the following positions or principles, as essential to the establishment of his hypothesis.

429. First, That the uterus is gradually developed; but not completely, until the last period of utero-gestation; that is, the neck of this organ is not effaced until that epoch.

430. Secondly, That the design of this arrangement is to keep the uterine contents at a distance from the os tincæ.

431. Thirdly, That as gestation advances, the contents of the uterus, and the os tincæ gradually approximate: when completed they are in contact.

432. Fourthly, That there is a strong resemblance of nervous structure between the uterus and rectum. And that this correspondence in structure is to ensure a similarity of function; namely, to "exclude the contents of their respective organs."

433. Fifthly, That the contractions of the uterus are produced, in consequence of a certain impression excited by its contents upon its orifice.

434. Sixthly, That the different parts of the uterus "are possessed of different states of sensibility, and that its orifice is most highly charged."

435. Seventhly, That as the orifice of the uterus possesses a high state of nervous power, it must necessarily have a peculiar function.

436. Eighthly. That the os uteri is but little connected with utero-gestation, until this is nearly completed, as the contents of the uterus are designedly removed from it.

437. Ninthly, That the os uteri, from its great sensibility, is intended to give notice, that the term of utero-gestation is completed; and is the medium by which the fundus and body are called into action, that the fœtus may be expelled.

438. Tenthly, That in proportion to the pressure exerted by the uterine contents upon the os uteri, will be the efficiency of the "parturient action," as is illustrated by malposition, &c. &c.

439. Eleventhly, That the cessation of contraction, in cases of ruptured uteri, is owing to the removal of the presenting part from the os uteri.

440. We trust we have faithfully given Mr. P's. ideas on the subject in question, in the positions now laid down; we will therefore proceed in order to their examination.

441. To positions first and second, we would observe, that though they are strictly true as regards arrangement, yet that this arrangement is not for the purposes declared by Mr. P.; namely, that the uterine contents should be kept at a distance from the *highly sensible* os uteri, that the parturient action need not be provoked. See prop. sixth.

442. Now it is a fact known to every body, that the complete distention of the uterus is not essential to this end; since the ute-

rus occasionally expels its contents at every period of gestation, from a variety of causes, which cannot in possibility act upon the *sensitive os tincæ* as a mechanical irritant. The ergot has been known to produce abortion, as well as other substances: so have passions and emotions of the mind; as well as external mechanical injuries, as blows, falls, &c.

443. In neither of these instances was it essential to the production of the parturient effort, that the uterus should have been fully developed, or that the os uteri should have been irritated by the presence of the fœtus or embryo, (see prop. fifth and tenth;) yet the uterine contents were thrown off by the repeated contraction of the fundus and body.

444. To proposition third, we may remark, that it proves nothing, unless it can be shown, that the sensibility included in prop. sixth, is exclusively resident in the extreme external edge of the os tincæ; for if it be admitted that the nervous distribution is extended over the whole of the neck of the uterus, (as is confirmed by anatomy,) premature labour should always take place so soon as this part is called upon to furnish room for the augmenting size of the fœtus.

445. For immediately after the sixth month, the neck of the uterus is found to expand; and it continues to do so, until it is entirely effaced. If, then, the "parturient action" depend upon the application of the contents of the uterus to this *highly sensible part* (according to Mr. P.) namely, the neck of the uterus, why is not its sensibility so roused by this mechanical impression, as to call into action the parturient effort, and premature delivery take place? But we find it altogether otherwise in the ordinary arrangement of nature; for it is almost constantly found that the neck of the uterus passively suffers itself to be developed, to the last period of utero-gestation, without manifesting the slightest repugnance to the operation; it must, therefore, be evident, that it would be otherwise, were Mr. P's. hypothesis well sustained, since here the agent and capacity are constantly presented to each other.*

* Mr. Power says, rather incorrectly, we think, that the "orifice of the uterus is but little connected with utero-gestation, until that office, (of utero-gestation,) is complete," [prop. eighth:] as we know that it must necessarily be involved in the development of the neck, so soon as this part is acted upon by the contractions of the body and fundus, as just stated. And if he shall insist, that "the high state of nervous power," is confined to the margin of the opening of the uterus, he is bound to show some proof of it: for so far he certainly has not. A bare assertion to this effect is not sufficient.

446. To proposition fourth, it is scarcely necessary to reply, since it also proves nothing. The stomach, the œsophagus, the alimentary canal, the gall-bladder, the vesiculæ seminalis and penis in the male, the vagina, all have muscular fibres, elastic membranes, blood vessels, nerves, &c., like the uterus: yet they prove nothing, by their structure, in favour of the position of Mr. P. that the contractile powers of the body and fundus are called into action, as an original and natural function, in consequence, and by necessity of, an irritation produced on the mouth of the uterus, by the pressure of the contents of this organ, as declared in prop. fifth.

447. To proposition fifth, we must declare, that it is not sustained by any fact within our knowledge, as a natural and essential arrangement. It would necessarily require that the *extreme sensibility* of the neck of the uterus should be confined to the extreme edge of the os tincæ; [see answer to prop. third,] or that that portion of this organ, which, in its vacant state, as well as in a state of impregnation until the sixth month, called its neck, must acquire a new state of sensibility, the instant the full term of gestation is completed; which condition has neither been shown nor insisted on by Mr. P. For, if the whole neck were possessed of an equal degree of sensibility, premature labour must take place soon after the sixth month, agreeably to the scheme of Mr. P.; since it is acknowledged by all accoucheurs of experience, that there is a constant nisus in the body and fundus; and which is favourable to the expansion of the neck, (par. 206.)

448. This being the case, it must be evident that the neck will be more or less irritated, (if it possessed this *extreme sensibility,)* by the contents of the uterus being forced constantly against it, by the contractions of the body and fundus; and, which we believe invariably takes place, at, or very soon after the sixth month.

449. Besides, we have no evidence of the "high state of sensibility," spoken of in prop. sixth, by Mr. P. It certainly does not exist, agreeably to our experience, either before or during parturition as a natural condition of this part; for unless it be in a state of disease, either chronic or immediately produced by rude and improper management, we have no evidence of this state. We can with much safety say, we have touched the os uteri a thousand times, without the woman betraying the slightest inconvenience or pain.

450. To prop. seventh, we can only say, that, were this "high state of nervous power" admitted to exist, it would prove nothing in favour of Mr. P's. hypothesis, unless he can prove that the mouth of the uterus always obtains it at the moment that utero-gestation is finished. For if he cannot do this, and he insist, that it takes place during the progress of gestation, it would be certainly mischievous; as it must be acted upon very constantly by a variety of agents; and thus would "give warning of the task of utero-gestation being perfected," and that labour was about to ensue prematurely.

451. In prop. eighth, Mr. P. seems aware of the difficulty there would be to reconcile "this high state of sensibility" of the orifice of the uterus, with the unavoidable production of irritation from the presenting part, (did this condition really exist,) as gestation advances, and especially after the sixth month. He therefore relies for support upon the mechanical arrangement, mentioned in one part of the proposition under consideration, by saying, that the orifice is "removed at a distance from the distending process." Now, it must be well known to so experienced a practitioner as Mr. P. that labour ensues sometimes before the entire obliteration of the neck takes place; and that it does not necessarily ensue immediately after it is completely effaced; neither of which should happen in any thing like the frequency that we have occasion to observe it, were Mr. P's. hypothesis well founded. Nay, the mouth of the uterus will sometimes be opened to some extent for days: indeed, even weeks now and then, without the "parturient effort" declaring itself.*

452. The ninth proposition declares, that the great sensibility of the os uteri is intended to notify the other portions of this organ, that the great business of gestation is finished; and that they must now set into action the parturient powers to remove the product of this elaborate process. It must of necessity follow, that this high state of sensibility is a sine qua non to parturition; and that the entire development of this portion of the uterus is a sine qua non to this sensibility; since Mr. P. affirms that this part is but little connected with utero-gestation until

* "A friend, a practitioner and lecturer of some eminence, is positive that he has known repeated instances of spurious pains, in which the cervix uteri has not only been entirely obliterated, but the orifice sufficiently open to admit a couple of fingers, and yet labour has been deferred for nearly a month afterwards. Professor Hamilton used to mention cases in which, though the cervix uteri was obliterated, yet real labour had not commenced."—*Note by Dr. Lyall to Minutes of the medical Evidence given in the Gardner Peerage Cause*, p. 23.

this office is complete, [prop. eighth.] The facts detailed in the observations upon prop. eighth, may be successfully employed against these views.

453. Besides, it is well known that labour comes on as promptly, and as certainly, when the fœtus dies before its full development, and, consequently, before the "task of utero-gestation is perfected," as when it lives to the full period; yet, in many cases, this does not happen until the period of nine months have expired. In these instances, so far is the neck of the uterus from being completely expanded, that a portion of it can be distinctly felt, if it be examined soon after the commencement of the pains. Indeed, the whole uterine bulk is oftentimes found diminished. How does the extreme sensibility of the os uteri perform its office in these cases? do they give warning that the term of gestation is completed?

454. But more powerful objections may be raised against prop. tenth, and which will have a direct application to prop. ninth. If we understand Mr. P. rightly, and we would feel great reluctance to force his meaning, the following circumstances must combine, that labour may take place: first, that an especial degree of sensibility must reside in the extreme edge of the os uteri; secondly, to make this sensibility available, the presenting part must press upon it; and thirdly, if this be of a minor kind, or not regularly applied, the parturient action is less forcibly or speedily excited," p. 39.

455. The first circumstance we have endeavoured to prove, does not exist in the natural condition of the part interested; and if we have been successful in this attempt, it might look like a work of supererogation to offer objections to the second and third, as they depend, agreeably to Mr. P's. statement, upon the first for their success or influence.

456. But let us suppose this exalted sensibility to exist; we shall soon see that it must be called into action, if the pressure of the contents of the uterus be capable of doing so, in a vast majority of cases, long before the "task of utero-gestation is perfected."

457. The history of human gestation shows, that the contents of the uterus is successively forced against the neck of this organ with more or less force, immediately after the sixth month is completed; and this, with an urgency that is highly instrumental in its ultimate expansion—this alternate state of contraction and relaxation, is calculated to call into play the functional duty of

this part, rather, perhaps, as a congenial and appropriate stimulus, than as a mechanical agent. But be this as it may, such is the economy of the uterus at the period of gestation spoken of, that its contents are regularly urged against its inferior portion, and with such force for at least two months, as would indisputably interfere with the comfort of the mouth of the uterus, did it possess one-half of the sensibility so gratuitously bestowed upon it by Mr. P.

458. Again, we have the "parturient effort" regularly established, where there is no fœtus within the uterus to be urged against the mouth of the uterus (as in extra-uterine conception,) to rouse its sensibility, that it may give warning, that "the task of utero-gestation is perfected." In these cases there can be no warning given by the mouth of the uterus, as it is not expanded; and consequently cannot avail itself of pressure, did it even possess the sensibility contended for; since there is not a sufficiency of substance within the uterus, to be forced against it; yet the parturient effort is excited.

459. It is true, Mr. P. is perfectly aware of this objection; but is quite unwilling to admit its full force. He says, that "extra-uterine fœtation is most commonly attended by pain, but these pains cannot arise from real expulsive action of the uterus, as that organ contains nothing in fact to expel." We are a little surprised at this declaration, as it betrays a lack of candour; for a practitioner so well read as Mr. P. cannot be ignorant, that almost every dissection of women who have died in consequence of an extra-uterine conception, has afforded proof, that the decidua was regularly formed within the uterus,* and that, in most of these cases, this substance has been expelled by the regular action of the uterus. We need not cite authorities in proof of this; the fact is familiar to every body conversant with obstetrics.

460. Mr. P. farther observes, however, that "such cases *do occasionally* proceed through their whole series of phenomena without any pain being excited." This may be—and if they do, they only form exceptions to the rule. Again, he observes, "the pains at other times, will commence in the early stage, and continue to be more or less excited throughout the whole period of

* Saxthorp, Langstaff, and Blundell have each met with a case of extra-uterine conception (the latter two) in which there was no regularly formed decidua, but in all there appears to have been an attempt at its formation; as flocculi, albumen and mucus were found to occupy the cavity of the uterus.

pregnancy." What produced the pain in these cases? Most probably, it may have been an unusual quantity of the decidua; for we are informed that it sometimes abounds.

461. Mr. P. admits as certain, "that a state of pain, which has been supposed similar to labour pains, does occur commonly from the eighth to the tenth month; it is probable, however," he continues, "that it does not partake of the nature of the parturient paroxysm, but consists of spasmodic actions of the surrounding parts unconnected with the uterus. It is also possible that a translation may be made from those parts to that organ, upon the principle of metastasis; or the child may gravitate during the latter months upon the cervical part of the uterus, which may have undergone some similar preparatory change to what it experiences in utero-gestation, and thus produce certain actions of the uterus by irritation of the cervix," p. 41.

462. It will be perceived, that there are three distinct positions assumed by Mr. P. in the above quotation, with a view to destroy the force the cases of extra-uterine conception offer to his doctrine; all of which we look upon as gratuitous: we shall, therefore, try, their validity, with the arguments and facts which observation has furnished us with.

463. Mr. P. declares it probable, that the pain the woman experiences between the eighth and tenth months of gestation, when she is carrying an extra-uterine conception, "is not of the nature of the parturient paroxysm." Why not? has it not all its characters? is it not alternate? is it not situated in the uterine region? is it not described as a forcing, bearing down pain? is it not evident that it is owing to uterine contraction, since, in most instances it is accompanied by a slight discharge of blood, and sometimes by the discharge of a substance resembling the decidua? could these phenomena present themselves, if this pain "consisted of spasmodic actions of the surrounding parts, unconnected with the uterus?"

464. We anticipate the answer of every candid mind to these questions, by believing it would be in the negative. Mr. P. has not urged a single reason for the belief, that uterine contraction is not the cause of this pain; why he has not done so, may be easily imagined.

465. Now, it seems to be a matter universally ceded, that there is a general and pretty constantly fixed period, at which gestation ceases,* and that, as soon as this period arrives, the uterus

* Mr. P. admits, "It is an established law of the system, that the connexion of

takes on the action of expulsion; or, in other words, a period arrives very constantly, at which the connexion between mother and child must cease—and this is, as an average period, made to occupy about two hundred and seventy-three to two hundred and eighty days. It is every way presumable, that every thing connected with pregnancy in its natural order has a definite period of duration; as every earthly thing has beside, that possesses life: consequently, this principle, or condition, can be maintained but for a limited time. The decidua then, like every thing else, has a limited period of vital energy; and that, when this time arrives, it dies, by a law of nature; nor can any art with which we are acquainted prolong its vital condition, one day beyond this limit.

466. In the human subject this takes place with the decidua, at about the end of nine calendar months; a little sooner, or a little later, as its peculiar constitution may be, or as those may be with which it is connected. If it die within the uterus, it becomes from that moment an extraneous body; and such is the constitution of this organ, that it instantly sets about expelling the body, be it what it may, that becomes foreign to it by losing its vitality. Thus it is with the decidua; it loses its life because it cannot be maintained longer, agreeably to a law of nature; it is then expelled, by the repeated efforts of the uterus; and these efforts are accompanied by pain.

467. In dysmenorrhœa, a similar process is instituted to dislodge the membrane or coagulum produced within the uterus. Mr. P. might say with equal propriety, in this case, that the pain the woman experiences, "does not partake of the parturient effort, because the uterus in fact has nothing to expel;" yet, in both instances, it extrudes by its action a foreign body.

468. If these facts, and the reasoning from them be admitted, the cause of pain at the end of nine months, (more or less,) in cases of extra-uterine conceptions, is accounted for; and consequently, the explanation of "the nature and causes of the parturient action," given by Mr. P. must fall to the ground; since, it may, nay, it is constantly produced in the cases alluded to, without either the condition of the os uteri insisted on by him, or the

the child with its mother should cease at, or very soon after, the ninth month from conception; whenever this takes place, it is probable, that the child becomes an extraneous mass, and consequently excites inordinate actions of the parts around to produce its removal; whereas it had previously constituted a vital part of the system, and as such had received both support and forbearance from it." p. 42.

presence of a child within it, both of which he considers as essential to the action in question.

469. The second position assumed by Mr. P. is, that the uterus may be urged to pain, by a translation of action from "the surrounding parts unconnected with this organ." We confess ourselves entirely ignorant of this change, as we have never witnessed it; and are altogether at a loss to account for pain attacking the surrounding parts, under this particular form of conception; and so uniformly, at the same period of gestation, in preference to the uterus itself, which every body will admit is more implicated in the progress and consequences of this mode of gestation, (unless, perhaps, it be the very sac itself in which the fœtus is concealed,) than any other portion of the neighbouring parts. Besides, metastasis is the translation of a morbid action: uterine contraction is normal.

470. The third position assumes an impossibility; namely, that "the child may gravitate during the latter months, upon the cervical part of the uterus, which may have undergone some similar preparatory change, to what it experiences in utero-gestation, and thus produce certain actions of the uterus, by irritation of the cervix."

471. In cases of extra-uterine conception, the seats of development are the ovarium, the tube, and the abdomen; and to these has lately been added a new one; namely, the substance of the uterus itself. Now, if the fœtus occupy either of the three first named places, it is impossible that it shall "gravitate during the latter months upon the cervical part of the uterus;" unless it be made to reach this part, by some process of ulceration, which it is scarcely worth while to anticipate, as in this case, it would not serve the purpose of Mr. P. The whole arrangement or anatomy of the parts forbids the possibility of a fœtus enclosed in either of the viscera just named, from being so precipitated in the pelvic cavity, as to come in contact with the cervical part of the uterus.

472. Late pathological researches have discovered that the fœtus may be included in the proper substance of the uterus. But even this fact cannot be made subservient to the purposes of Mr. P. He declares the possibility of the fœtus so to gravitate, as to reach the cervical portion of the uterus at the last months of utero-gestation; but, in the newly discovered species of extra-uterine conception, the period of gestation has hitherto been con-

fined to the first few months, and has proved fatal in every instance so far known: consequently, cannot be looked upon as a support to Mr. P's. conjecture, (see pars. 164, 165.)

473. It may be farther urged against proposition tenth, that the irritation caused by the presence of the presenting part, upon the "highly sensitive os uteri," should be in proportion to the pressure it may exert upon it. Now, this is contradicted by the experience of every day. For there are no cases so uniformly slow, as those in which the membranes have given way early, and in which the presenting part "gravitates" so decidedly, "upon the cervical portion of the uterus." The tonic contraction of the uterus almost immediately ensues after the rupture of the membranes; by which the presenting part is made to rest upon, and mechanically stretch the most depending part of the uterus, (the very situation contended for by Mr. P.:) yet this condition may remain from a few hours to many days, without having this period invaded by pain.

474. Proposition eleventh says nothing more, than when the uterus is entirely empty, it ceases to contract; this is but as it should be; or the poor female, who has had her uterus once forced to contraction, would never have it to cease, did not a state of vacuity prove a guarantee against them. It is, therefore, every way presumable, that in the case of a rupture of the uterus, when the fœtus and secundines have escaped from it, that this organ would cease to contract, as no motive now remained for this function; to say nothing of the extreme state of exhaustion this accident uniformly produces, which of itself is capable of arresting uterine contraction.

475. Mr. P. says "the contractions of the os uteri may be artificially excited by an irritation applied to the orifice, affording a proof that the cause presumed is adequate to produce the effect attributed to it," p. 39. Admitted; but what does it prove in favour of Mr. P's. hypothesis? Nothing; especially as Mr P. will not declare it to be a natural state of function. Irritating the fauces will produce vomiting, and a dose of jalap will purge; but will any body acknowledge either to be essential to the emptying of the stomach and bowels under the exercise of their natural or normal actions?

476. Mr. P., with a view of strengthening his conjecture, quotes a letter from his father, Dr. Power, of Litchfield. He commences his letter by saying, that "the parturient contraction does not happen in consequence of distention of the uterus after nine

months' pregnancy, but from some stimulus applied to the os uteri may be inferred from the following case.

477. "A woman, forty years of age, the mother of many children, considered herself at the full period of utero-gestation, and experienced at that period a slight pain or two, after which she became free from any farther effort for nearly three months; her situation exciting alarm, several medical gentlemen saw her, and declared, after examination per vaginam, that she was not with child, as they could feel no weight upon the os uteri, or variation of it, from what is found in the unimpregnated state. I saw her, and in a common examination as she lay upon the bed, found matters apparently as had been represented; observing, however, the abdomen very large and pendulous, hanging down when in an erect posture almost to the knees. A friend of hers, a physician of great eminence, who was present, was requested to stand above her on a chair, and to elevate as he stood, the pendulous belly with the assistance of a napkin; an examination was made under these circumstances per vaginam, and I could feel now distinctly the head of the child. A bandage was contrived with straps to her stays, by which the child was removed from its situation over the pubes; and in four or five days labour-pains came on, and she was delivered of an amazing large but still-born child," p. 40.

478. To this case it will be only necessary to observe, that there is not the slightest evidence of the agency of the presenting part, in producing labour. For it is acknowledged that the patient was the mother of "many children;" and, consequently, liable from this cause to the anterior obliquity of the uterus. It is by no means probable, that this was the first instance of deviation; especially as it was so extreme as to reach nearly to the knees when the woman was standing. If it existed in her previous pregnancies, how did labour commence in them, if the aid given by Dr. Power was essential to this process, since it was not resorted to upon the former occasions?

479. Besides, Dr. P. acknowledges that four or five days elapsed before labour took place; if this be so, what evidence is there that the head pressing against the os uteri was the cause of it? none whatever. It is much more probable, if any thing had an influence upon uterine contraction, that it was the change of position and the bandages; as it is well known that external friction over the body and fundus will produce contraction, even when the uterus is in a state of inertia. Again, we have seen

many cases of anterior obliquity, in neither of which was it necessary to have recourse to the means employed by Dr. P. to provoke labour—it always came on spontaneously at the appointed time.

CHAPTER XII.

OF LABOUR.

480. WHATEVER uncertainty may exist as to the efficient cause of labour, we are taught by long experience, that about the fortieth week of gestation there is, for the most part, a painful effort made by the uterus to expel its contents; and this effort is called labour. This event rarely takes place so suddenly, or so silently, as not to present a very regular series of phenomena, which, from their universality, must be considered as constituting a part of this process; and some of them, perhaps, must be looked upon as essential to its well performance. The appearances to which I allude may be divided, 1st, into those which affect the system at large; as rigors, and a number of what are denominated nervous symptoms; 2dly, into those which affect certain portions of the system independently of the uterine; as frequent inclination to make water, or a suppression of it, and tenesmus; 3dly, into those which affect the uterus in particular; as the subsiding of the uterine globe; the secretion of mucus; the dilatation of the mouth of the uterus, and its alternate contractions.

SECT. I.—1. *Of Rigors, &c.*

481. It is a very usual thing, especially with nervous women, to be seized with rigors of more or less severity, in the very commencement of the silent preparations for, or during the more evident progress of the labour. These shiverings, or rather, tremblings, are never attended with a reaction of the system; and therefore, must not be considered as ushering in fever. These rigors would seem to be connected in some manner with the dilatation of the os uteri; and occur most certainly, where this is rapidly performed. Nor do I at this moment recollect an instance of rigor taking place where the os uteri was not more or less dilated. One of the most remarkable examples of this kind I recollect to have witnessed, was with a lady who awoke with a smart rigor

from a sleep, and who every moment expected her labour to commence. The nurse became alarmed, and I was immediately sent for. When I arrived, I found her still trembling very severely, but had not experienced any symptom of labour—she assured me, that nothing was the matter with her, except what I was witnessing; namely, an agitation of the whole body, which she could not, by any effort, control. It was an extremely cold night, and I had approached the fire; but I had not been there five minutes before my patient exclaimed, she believed her labour was coming on; and this really was the case, and so rapidly, as not to give me time to place her in a proper situation for delivery; she was delivered in less than five minutes from the time she first called my attention to her.

482. When these tremblings take place later in the process, I have always felt assured the mouth of the uterus was dilating or dilated. They sometimes occur immediately after labour. And, so far as I have witnessed, they have never been attended by the sensation of cold. Nor have I ever known them do the slightest injury: though the patient and her friends are oftentimes so much alarmed, as to commit an error, by giving stimulating or heating drinks, &c.—in a word, they require no attention.

483. Besides the rigor I have just mentioned, we sometimes see a number of nervous, or hysterical symptoms, attend the progress of labour; especially with the first child, if the process be rather slow—such as a disposition to cry, a sense of suffocation or choking, palpitation of the heart, &c.; all of which, however, are almost sure to disappear so soon as the labour becomes active, and the pains succeed each other quickly. Should they be violent, a little of the tincture of asafœtida, or Hoffman's anodyne liquor, may be advantageously administered. Under such circumstances, we should give the patient every *reasonable* assurance of a happy termination of her sufferings; and that there is nothing uncommon in her situation.

Sect. II.—2. *Frequent inclination to make Water, Tenesmus, &c.*

484. The uterus, even in the commencement of labour, if the fundus and body of this organ act healthily, is very often found so low in the pelvis, as to press upon some portion of the bladder; but, especially, upon the neck; this pressure excites a frequent inclination to make water; in obeying which, the woman al-

ways suffers more or less inconvenience. Under such circumstances, the urine is very frequently driven from the bladder in small quantities, by every contraction of the uterus; this often leads the patient and her friends to believe that the liquor amnii is escaping. This, I think, more frequently happens where the os uteri opens reluctantly; and where the pains are pretty frequent and severe—it needs no application, unless the inclination cannot be obeyed, and it amount to retention: in such case, the catheter must be introduced; nor should this condition be suffered to remain too long without being relieved by this instrument. This retention, so far as I have witnessed, never takes place but in protracted labours, and especially in such as may require artificial means for their relief. It should ever be a rule to inquire frequently into the state of the bladder in all cases of tedious labour; and should the patient have been several hours without passing urine, the catheter should be employed; and particularly, if there be no prospect that the labour will terminate speedily. Much present inconvenience, and sometimes lasting mischief, have arisen from the neglect of this precaution—I have seen this disposition continue for days after delivery, and relieved only by the occasional use of the catheter; I have known an opening take place between the urethra and the vagina by the part sloughing; and this in consequence of long pressure; and witnessed an incontinency of urine from the same cause.

485. In a case of the latter kind I was once consulted by my friend Dr. William Harris, in which entire relief was procured by the use of the tincture of cantharides. In this patient the stilicidium of urine was so constant as to lead to the suspicion there was an artificial opening from the uretha; but a careful examination could detect no such state—I think this lady has had a child since that period without this accident being renewed; but of this I am not certain.

486. It is not unfrequent, at the commencement of labour, for the bowels to be several times moved in pretty quick succession, accompanied with a strong effort or tenesmus; or this inclination may take place after the labour is advanced, from the mechanical pressure the rectum suffers from the loaded uterus completely occupying the vagina. In the first case, should there appear to be sufficient time to permit its operation, a full dose of castor oil will be sufficient to remove it—should there not be time, five-and-twenty drops of laudanum will speedily quiet this inclination. In

the last case we can offer no relief, unless the rectum be impacted with hardened feces, which do not escape from it, even by the repeated pressure of the child's head—when thus situated, an emollient injection will almost always procure relief.

Sect. III.—3. *Affections of the Uterine System in particular.*

487. These last are of much more importance than those we have just been considering; and most of them may be looked upon as almost always accompanying every healthy labour, and may be divided into

a. The subsiding of the abdominal tumour.
b. The secretion of mucus.
c. The dilatation of the os uteri.
d. The alternate contractions of the uterus.

a.—Of the Subsiding of the Abdominal Tumour.

488. When the uterus and pelvis are in a healthy condition, the fundus at the last period of utero-gestation, is found little or no higher than at the eighth month; the reasons for this are, first, the constant tendency which the body and fundus have to contract after the seventh month, forces the uterine contents lower into the pelvis; and secondly, the effect of these contractions upon the neck of this organ, causes it to unfold, and thus furnishes additional room for the increasing fœtus. In consequence of the development of the neck, the uterine contents must necessarily sink lower into the pelvis even without the agency of the contractions just spoken of; but especially when these take place in a healthy and natural manner. The existence of these contractions can be ascertained by the introduction of the finger into the os uteri, and placing its extremity gently against the membranes; when thus situated, they will be found to be alternately tense and relaxed*—the effect of these contractions will be the obliteration of the neck of the uterus, and eventually producing labour itself.

489. The sinking of the uterus into the pelvis† has been justly considered a favourable circumstance; as it would seem to declare two important facts: 1st. A healthy condition of the uterus itself; and 2nd. A healthy conformation of the pelvis.

* Baudelocque.

† The old women call this *falling*.

b.—The Secretion of Mucus.

490. This important discharge almost always takes place, even before other symptoms declare labour to be at hand. Its formation is the result of one of the numerous sympathies to which the uterine system lays claim. It is always a welcome harbinger to the accoucheur, as it almost always foretells the condition of the parts, or ensures a favourable disposition in them to relax; and this disposition is, cæteris paribus, almost in proportion to the quantity secreted. When it does not appear in the beginning of labour, even where the pains are frequent and severe, we rarely find upon examination, especially with a first child, that the labour has progressed much, or that the os uteri is well dilated. But if a quantity be quickly secreted, even very soon after we have made an examination, it will be found that the orifice of the uterus has suddenly undergone a change, by being either perhaps well dilated, or easily dilatable: hence, we infer, it is in some way or other connected with, or instrumental to, this process.

491. This discharge is frequently tinged with blood; this colour is derived from the rupture of some small blood vessels of the chorion, or perhaps of the placenta. When not tinged with blood, it much resembles the white of an egg. Dr. Denman calls it an increased secretion of the fluid natural of the parts; but to this it does not appear to bear the least resemblance—and if it be even furnished by the same vessels, it must be by an altered action of them.

492. The formation of this fluid answers two important ends: 1st. It lubricates the vagina, which permits the fœtus to pass more easily; 2d. It acts as topical depletion from the neck of the uterus, vagina, and perinæum; and thus facilitates their relaxation. This last circumstance I consider to be the chief use of this discharge; for were it confined to the mere lubrication of the passage, its utility would be much more limited than it is found to be; for this end could be answered very well by artificial means; but these, it is well known, are not so efficient.

493. The writers on midwifery have too much limited the usefulness of this discharge: they look upon it as a mere lubricant; and carefully caution against too frequent touching, lest, say they, it should remove this substance from the vagina, and thus

give rise to more friction between the child's head and the soft parts of the mother. Now, were this the only evil to be apprehended by incautious or unnecessary touching, it could be easily remedied by any mild unctuous substance; but, as I have just observed, it is well known, though not acknowledged, that this substitute by no means answers the purpose for which I believe this discharge was instituted.

494. By frequent and incautious touching, the glands furnishing this fluid are over-stimulated, nay, sometimes become inflamed. In this case the secretion ceases, and the parts become tender and swollen; especially the mouth of the uterus, should it not be fully dilated; the pains are less frequent, and less protrusive; the woman is restless, and enjoys no calm in the intervals of the pains; fever is excited; headach, thirst, and a hot skin follow: in a word, a new condition of the system arises, and almost suspends the business of labour. It would be in vain, under such circumstances, to offer a substitute for the absent mucus, by presenting to the parts any unctuous, or mucilaginous substance whatever: it can only be recalled by rest, and free blood-letting. To the latter, we must have immediate recourse, if we wish to subdue the unnecessarily provoked inflammation; and to restore the uterus to the re-enjoyment of its suspended powers. In many cases like those just mentioned, I have seen this remedy act with the certainty and promptitude of a charm. This intention is very much aided by throwing up the vagina, by means of a syringe, a rich infusion of flaxseed, or slippery elm bark tea.

495. The disturbance excited throughout the system when the vaginal surface becomes inflamed, distinctly shows the important rôle this mucous secretion performs in the economy of labour; it demonstrates that it is instituted for a much higher purpose than merely to lubricate the parts: it shows clearly, that its formation is in some way or other connected with the dilatation of the os uteri, and the relaxation of the perinæum: let us beware, then, how we interrupt its formation, by rude and uncalled for handling.

c.—Of the Dilatation of the Os Uteri.

496. All writers upon midwifery, make this important operation the effect of mechanical impulse; though many of them, at the same time, are forced to acknowledge they have seen it

dilate, where neither the distended membranes nor any portion of the child has entered its circle, to effect its opening by a wedge-like action. That the waters distending the membranes, and the child itself, when powerfully impelled by uterine contraction, may occasionally have an influence on this operation, I am not disposed to deny; but if this take place, it does not open this part either so easily, so kindly, or so effectually, as when this is achieved by the powers destined for this purpose. Before I offer a different explanation of this phenomenon, it will be necessary to consider the different kind of contractions performed by the uterus: they are—

497. *a.* The contraction of the longitudinal fibres of this organ.

b. The contraction of the circular fibres.

c. The simple contraction.

d. The compound contraction.

e. The tonic contraction, and its effects.

f. The spasmodic, or alternate contraction, and its effects.

a.—The Contraction of the Longitudinal Fibres.

498. By the longitudinal fibres of the uterus, I wish to signify those fibres upon the contraction of which the uterus is shortened from fundus to mouth; and this will be in proportion to the effort. The effect of this contraction is, to make the contents of the uterus approach its mouth; as this, from its organization, must necessarily be the least resisting part, this tendency will be constantly in proportion to the diminution of resistance,* and the force with which these fibres act. It will be perceived, that if the uterus be diminished in length, it would, necessarily, be increased in breadth, unless opposed by the circular fibres; or, in other words, the circular fibres would be put upon the stretch, until the diminished length be compensated, did they not resist this violence, by being stimulated to contraction, by the uterus

* The duration of labour will therefore almost invariably depend upon the resistance of the circular fibres of the mouth of the uterus, (all things being equal.) It is evident to every experienced accoucheur, that the circular fibres constituting the mouth of the uterus have different degrees of disposition to relax, when acted upon by the contracting body and fundus; in some instances, the long-continued efforts of the body and fundus are required ere they yield; while in others, contraction scarcely takes place before they give way, and permit the presenting part to pass freely; nay, sometimes rapidly.

becoming shorter from fundus to mouth by the contraction of the longitudinal fibres, and which necessarily tend to distend the uterus in its transverse direction. But being thus excited to action, the two sets of fibres urge the contents of the uterus towards the least resisting part of itself, namely, the mouth; by which means the membranes become distended, and lengthened in the direction of the longitudinal axis of this viscus, nearly as much as this set of fibres shorten themselves. The action of the longitudinal fibres is at right angles with the circular; and has a tendency to oppose, or overcome the disposition of the circular fibres to narrow the uterus in its transverse direction.

b.—The Contraction of the Circular Fibres.

499. By the circular fibres I mean those which are arranged transversely from the mouth of the fundus, and which, by contracting, diminish the capacity of the uterus in the direction of the transverse diameter; and should they act alone, and the os uteri be closed, they would necessarily stretch the uterus in the direction of its vertical, or longitudinal diameter. These fibres, as we have said, may be considered as running round the uterus, from the fundus to the termination of the neck; they have, as I shall attempt to prove presently, but an indirect agency in farthering the expulsion of the uterine contents; the action of the circular fibres, especially at the neck of the uterus, is almost in direct opposition to the longitudinal, and serves rather to retain than to expel the contents of the uterus. It is by the successful and uniform contraction of the circular fibres, and especially those which compose that portion of the uterus, properly termed the neck, in the unimpregnated, or the undeveloped state of the uterus, that the woman is enabled to carry the produce of conception to the full period of utero-gestation. They may act independently of the longitudinal fibres; or they may act with greater force than they, though acting simultaneously with them, as I shall have occasion to remark by and by.

c.—Of the Simple Contraction.

500. When either the longitudinal or circular fibres act alone, "the simple contraction" takes place. It may be asked what evidence have we that one set of fibres can act independently of the other? I answer, of this we have abundant proof in the contractions which take place towards the latter period of gestation,

and of which we are made sensible, by passing the finger, as already mentioned, (488,) within the os tincæ, and placing its extremity against the membranes—a tense and relaxed condition of the membranes is perceived: this is owing to the longitudinal fibres acting alone, for did the circular act at the same time, it would be felt by the finger, by the edges of the os uteri stiffening or becoming rigid; but this is not the case. On the other hand, we prove that the circular fibres may contract firmly, and for a long time, without the slightest co-operation of the longitudinal fibres, by the well known circumstance that when the waters have been discharged for some time, the uterus is found to embrace the body of the child firmly: in this case it is evident that the circular fibres contract alone, as there is no effort to expel the child, as would be the case, did the longitudinal fibres exert an influence at the same time.

d.—Of the Compound Contraction.

501. This contraction is the effect of both sets of fibres acting simultaneously; this is proved by the mouth of the uterus attempting to close itself during the period of action, and by the head, or presenting part, evidently sinking lower, (though, perhaps, to rise again immediately,) in the pelvis. Now, these two circumstances could not happen at one and the same time, did not both sets of fibres contract together; it is this compound action which attends the commencement of all healthy or regular labours.

e.—Of the Tonic Contraction, and its Effects.

502. The tonic contraction, or that contraction which tends to diminish the uterus in all directions, (250) cannot be called into action to any extent until the uterus is either in part, or altogether deprived of its contents;* but if this happen even in a small degree, the whole of the fibres of which the uterus is composed begin to shorten, or fold themselves up, and thus make the uterus accommodate itself to the quantity and almost the shape

* Whatever will weaken the force of the uterus, or diminish the quantity of its contents, will permit, in that proportion, the tonic contraction of the uterus to take place, if this organ be in a healthy condition; even a less quantity of blood in the parietes, or a very partial dilatation of the os uteri, or the escape of a very small quantity of the liquor amnii, will do the same.

of its contents. In consequence of this, the direction, and, perhaps, the size of the blood vessels of this organ are changed; and, though in no very sensible degree at first, or when its contents are but little diminished, yet it will be found that the changes will bear an exact proportion to the evacuation from the uterus. It is this contraction which preserves the woman from fatal hemorrhage, when the placenta is either partially or altogether detached; it serves also the important purpose of keeping the uterus in constant contact with its contents, and enables its fibres to act with more efficiency upon the body to be expelled; it is also this contraction which opposes the re-distention of the uterus. and so obstinately does it do this sometimes, that turning is rendered impracticable.

f.—Of the Spasmodic or Alternate Contraction, and its Effects.

503. This contraction is often called the spasmodic contraction; but I prefer, as I have already observed, (254,) the term alternate or periodical contraction; for it is not necessarily accompanied with pain.*

504. The cause of these contractions, like the contractions of every other muscle, must be a stimulus of some kind or other. I have already declared (161,) my ignorance of the nature of

* The alternate pains must not be confounded with the severe and distressing pain in the back; this pain, where it exists, (for it is not constant, as we have seen a number of instances in which it has not taken place,) is sometimes more distressing than that caused by uterine contraction. It is difficult to account for this pain; some have attributed it to the stretching of the posterior ligaments of the uterus; others, to the violent contraction of the muscles of the posterior part of the trunk, &c. Neither of these causes appears to be sufficient to account for this symptom. We are of opinion it is caused by some irregular action of the uterus itself; perhaps the posterior plains of fibres, as we have very often seen it relieved by the exhibition of ergot. Madame Boivin says, this pain never takes place but when the head presents; or when the head has passed the superior strait, there is no pain in the back; or when the head is engaged in the superior strait, or sometimes when in the excavation of the sacrum, when the uterus had not begun to dilate, or after the head has performed rotation the pain ceases. So, also, if either the first or fourth presentation exist, the pain will be confined to that part of the back which corresponds with the right lateral portion of the sacrum; and when the second or fourth obtains, it will be felt in the left side of the sacrum. This pain, however, ceases generally after the escape of the waters, provided this take place when the labour is pretty well advanced; for if this happen very early in the labour the pain is more certain to take place; and is of greater severity.

the stimulus that excites the uterus to contraction at the end of nine months; though we are very often enabled to detect it before that period; for it is always found, that whatever can stimulate this organ to a certain degree, is capable of provoking its action: and if not interrupted by proper counter-agents, it goes on until the contents of the uterus are expelled. So much for the causes which may excite the uterus to action; but what is it that gives these contractions their alternate or periodical form? So far as I know, a solution to this question has never been given; indeed, I am not certain it has ever been asked; therefore, if I fail to be satisfactory in the one about to be offered, it must be remembered I only hazard a conjecture; and it will but share the fate of thousands upon every subject, from the time of Hippocrates to the present moment.

505. In order that a muscle may renew its contraction, it must be elongated by some antagonizing power, after it has become relaxed; in almost every part of the body this power is at once discoverable; but where, and in what resides, that which enables the uterus to repeat its efforts? I am of opinion this power depends upon its own structure and economy—I shall now attempt to prove this. The uterus, by impregnation, becomes of course distended, in proportion as that process advances—it is, therefore, elongated, or its fibres put, to a certain extent, upon the stretch, they are thus enabled to contract as soon as the appropriate stimulus is applied. What is the effect of this contraction? An approximation of the uterine fibres; a compression of all its blood vessels, with the immediate discharge of a large portion of blood from them into the general system; in consequence of this, the uterus becomes paler and the vessels empty, or nearly so. The blood escapes by means of this contraction quaquaversum; and, to facilitate its departure, the anastomoses between the arteries and veins are unusually frequent; and the latter vessels are not furnished with valves.

506. What is the effect of the subsequent relaxation? The fibres of the uterus become longer, straighter, and more easily distensible; the large vessels and sinuses are less compressed, and consequently will now permit the natural resiliency of their coats to act—while the influent blood will suddenly fill them, and thus restore the equilibrium which the previous contraction had destroyed—now, this rapid influx will not only distend the empty vessels, but will also prove a powerful stimulus to the

uterine fibres; and thus urge them to renew their contraction; and this will be repeated from time to time, until there be no farther necessity for its continuance. This plethoric state of the uterus, if we may so term it, is proved by the heightened colour of its parietes.

507. I presume, when this contraction is best performed, it is chiefly by the exertion of the longitudinal fibres.

508. This opinion is founded upon the relative strength of the two sets of fibres. I believe that the longitudinal fibres, or those which by contracting shorten the uterus, are the stronger of the two; and for the following reasons: 1st. Because, if they were of equal strength, delivery could not take place; as the circular fibres by their contractions, would rather embrace and retain the child, than advance it; since they tend to diminish the transverse diameter of the uterus; and consequently, their action is, as I have already observed, (498,) at right angles with the action of the longitudinal fibres. 2d. When either the absolute, or relative strength of the circular fibres is increased by any cause whatever, labour does not advance; therefore, the circular fibres do not directly contribute to the expulsion of the child. 3d. As the circular fibres do not, from the very nature of their action, contribute to the immediate propulsion of the child, as just declared, they must be considered inferior in power to the longitudinal fibres; since the child is expelled without their direct agency—therefore, the latter set of fibres has not only to move the child, but to overcome the resistance the former gives, by the direction of their action. We see this finely exemplified in those cases where the waters have been discharged early, and the uterus closely embraces the child; and where, by virtue of its tonic contraction, it even accommodates itself to the inequalities presented by the child's body; in such instances, labour would be stationary, did not the longitudinal fibres possess greater power than the circular.

CHAPTER XIII.

THE MANNER IN WHICH THE OS UTERI IS OPENED.

509. With these facts before us, I shall attempt the explanation of the dilatation of the os uteri. At the full period of utero-

gestation, the process called labour must take place, that the womb may expel its contents; to this important end, its body and fundus must contract, while its neck must dilate—the question now is, how is the latter effected? During the whole period of gestation, the lower part of the womb is kept closed by the contraction of its circular fibres: this contraction of the circular fibres must now be overcome by the exertions of the longitudinal; therefore, these two sets of fibres may, without a strained comparison, be considered as antagonizing powers. During gestation, at least until the seventh month, the longitudinal fibres yield much more willingly than the circular, to the distending force of the increasing ovum; this may be owing to their greater length, or their greater laxity; and hence, perhaps, the lengthened form of the uterus. This stretching must have a limit, or a maximum; and when this arrives, they will necessarily be stimulated to contraction; and this really takes place at this period, as I have several times declared, and attempted to prove, (488, 500.) Now, the effect of this effort, which is almost constantly repeated after it is once commenced, is felt by (until now,) the passive neck of the uterus; and obliges it not only to support the action of the body and fundus, but also the weight of the child and waters; these joint powers make it unfold itself, and to become identified with the other portions of the uterus; so that, at full time, it forms a portion of that globe which is placed in the cavity of the pelvis; and its distinctive mark, or projection, is lost in the uniform surface presented to the finger.

510. From the moment the neck begins to be operated upon, it begins to lose in thickness, and in length—and these changes commence at that part next to the body of the uterus; so that the extremity of the neck, or the os tincæ, is the last portion which is effaced. When the longitudinal fibres act, the circular become a little stretched, in consequence of the length of the uterus being diminished; and I have already said (498,) that the uterus cannot diminish in one direction while the membranes are entire, without increasing in another; and this must be the case so long as the mouth of the uterus remains shut; but this cannot be very long, as it is obliged to sustain the whole pressure of the contents of the body of the fundus, and this in proportion to the power with which the longitudinal fibres may contract, as well as the force exerted by a part of the circular fibres, which are now called into action, by the contraction of the longitudinal distending them, until they themselves contract from this very stimulus.

511. This action and re-action, are reciprocated for some time; the longitudinal fibres shortening the uterus from fundus to mouth; while the circular attempts to resist the effect of their action, by contracting themselves, and thereby opposing the tendency to distention in the transverse direction of this body—the effect of this compound action is to direct the body to be moved towards that part which offers it the least resistance; and this is the small opening called the os uteri—the fibres which immediately surround this opening, and oppose its immediate dilatation, gradually become weakened by the superior strength and persevering action of the longitudinal fibres; and after a contest of more or less severity and duration, they yield; and in their quiescence, the dilatation of the os uteri consists.

512. In the whole of this arrangement, we do not see a necessity for the mechanical wedge-like agency of the membranes on the *circle* of the os uteri, which Dr. Denman* speaks of as important to its dilatation—for every day's experience proves that the most perfect and speedy relaxation of the mouth of the uterus takes place, without any such influence. Indeed the doctor† seems to yield this point when he confesses that "in many cases the membranes break spontaneously long before this period (that of the os uteri being wholly dilated;) without any material inconvenience." Besides, we see the same relaxation take place where the pelvis is so much deformed, that it is impossible for this mechanical arrangement to take place, as the os uteri cannot become the depending part, or be in the axis of the superior strait.

513. If it be asked, why are those labours in which the membranes give way early, always more tedious and painful, than those in which they are preserved?

514. I would answer, that this is not by any means always the case; and that when the membranes have yielded from their delicacy before the genuine expulsive action has commenced, the uterus may be said to be surprised, (if I may use the expression,) into contraction, before the natural stimulus is given. In consequence of this, the uterus is made to embrace the child closely, by virtue of its tonic power, and is sometimes, by this event thrown into irregular and painful contractions, by the unequal surface which the child's body presents to its internal surface—for the evacuation of the waters prevents the lower part of the uterus from being fully stretched by the contractions of the body and

* Introduction, Francis's ed. p. 278. † Idem, p. 280.

fundus; and by this means, retards the weakening of the circular fibres at this part; a circumstance of considerable moment to the dilatation of the os uteri. If an unusual degree of pain be excited by the premature escape of the waters, it is not because the membranes and waters fail in their wedge-like agency to dilate it; but because the uterus is prematurely excited into action; and of course, before all the terms of pregnancy have been complied with—as the waters, while retained, serve to ensure an equal distention of that part of the uterus, which we have agreed to call, in the unimpregnated state, its neck, and is the part which is to relax during labour, that the child may escape from the general cavity of this organ.

515. I am abundantly confirmed that this is the true explanation; for, by the fact, if the waters have not prematurely passed off; or in other words, if at the time of their escape, the uterus is prepared for the regular routine of labour, the mere circumstance of their evacuation, (cæteris paribus,) will neither materially retard the dilatation of the os uteri, nor necessarily create unusual delay to delivery—of this, we have additional proof from Dr. Denman, as just quoted. But in this admission, let it be recollected, that I consider the waters as useful, by their equal pressure upon the lower part of the uterus, and by distending, and, at the same time, by the same agency, weakening, the circular fibres of this part; and thus indirectly favouring the dilatation of the mouth of the uterus.

516. I may therefore, I believe, safely lay it down as a general rule, that the early spontaneous rupture of the membranes does not directly or necessarily produce a more painful or tedious labour, unless the uterus is from this cause immediately excited to contraction; for should pain not follow very soon, or should the legitimate pains of labour have preceded this accident, the labour will, all things being equal, be as in ordinary cases; for I have many times seen patients, with whom the first intimation of labour being at hand, was a discharge of the liquor amnii; but this not instantly followed by pain; but when the pain did come on, the labour was speedily finished—in these instances, the mouth of the uterus opened speedily, and as extensively as though the membranes had not given way, and the waters had not discharged themselves.

517. Let any one who has made the attempt to penetrate the os uteri when rigid, be asked, if a direct action on its edges by the hand formed in a wedge-like shape, and the application of

considerable force will always be sufficient to overcome the opposition of the circular fibres of the neck? He will answer, if he be candid, No; and will add, that the part would suffer laceration rather than yield to the force employed. Is it reasonable, then, to expect that a wedge formed by the smooth, and comparatively delicate membranes, with the liquor amnii within them, will, as a mere mechanical power, however aided by a strongly contracting body and fundus, achieve more than the well-directed force of the hand as just stated?* Let any one familiar with the general manner in which the distended membranes offer themselves at the orifice of the uterus during pain, be asked if their presence and agency, at such a moment, presents to his mind the idea of a mechanical power, attempting to overcome the resistance offered by the contraction of the circular fibres? and, I am sure, he would unhesitatingly say, No.

518. When the os uteri does dilate, it is not by its edges being stretched mechanically—it is an absolute inability in the circular fibres to maintain a state of contraction, and, for the time being, may be considered as paralyzed, or excessively fatigued—or, perhaps, more properly speaking, it is the relaxation of a sphincter not subject to the control of the will.

519. I admit, that the os uteri is sometimes forced to open in a degree, by the membranes, or the presenting part engaging in its circle when these parts are strongly impelled by the contractions of the body and fundus; but, when this happens, the orifice does not present the same feel as when it dilates by the regular, and natural process. It is evidently perceived that it is reluctantly yielding to force, and is not obeying a law.

520. When labour is most easily, and naturally performed, there appears to be a tacit understanding, if we may be allowed the expression, between the longitudinal and circular fibres; the latter relax suddenly, and extensively, while the former contract so silently, but so effectually, that we cannot discover the agencies by which this is effected—who has not witnessed the al-

* Besides, every accoucheur knows, that in many instances of the most speedy and perfect dilatation of the os uteri, the membranes are too feeble to bear the slightest force. The mere touch of the finger will sometimes rupture them; and this at the moment the os uteri is yielding rapidly. Now, in such cases, the dilatation of the os uteri should cease, as soon as the membranes had yielded, if their presence were mechanically necessary to this end; especially, if a portion of the child have not engaged in the mouth of the uterus, to supply the place of the distended membranes.

most instantaneous opening of the os uteri? who has not been sensible of the retraction of its edges over the child's head, and the delivery of the child follow almost at the same moment?

521. To the explanation just given of "the manner in which the os uteri becomes opened," it is objected, "that if a muscular part is suddenly extended, its contractile powers are brought into violent action; but let the part be extended gradually, as is, of course, the case where the extension depends upon the slowly increasing size of the ovum, and when it has arrived at its 'maximum of stretching,' its antagonistic powers appear to be destroyed; for contraction either does not take place at all, or very imperfectly. It is well known that surgeons act upon this principle, when they have to overcome the obstinate contraction of muscles: they exhaust the powers of the part, by keeping up a gradual extension."*

522. The objection just stated is ingenious, but not valid: 1st, because there is no analogy between the inordinate stretching of a muscle not organized for this purpose, and the expansion of the uterus, to which this capacity is most amply given; 2d. that a period must arrive, in the stretching of even the common muscles, however gently performed, at which they would contract, and that violently, if permitted from the stimulus which "extension" must offer; and it is precisely so with the uterus—its organization is such, as to support a great deal of distention, before it is, like the common muscle, stimulated to contraction; 3d. the bladder is gradually distended, by the percolating urine, until its parietes are put upon an easy stretch; it then gives warning, that it can no longer support this state with impunity; for the distention has arrived at its healthy "maximum," and must not be carried farther; 4th. that were the bladder, or the uterus itself, suddenly stretched to the extent of their capacity, they would as certainly lose the power of contraction, as the muscles over which the surgeon exerts his control.

* Lond. Med. and Phys. Jour. for August, p. 143.

CHAPTER XIV.

CONDUCT DURING LABOUR.

523. In the management of labours much judgment and caution are required, that a simple and natural case may not be converted into a laborious and dangerous one. Ill-directed measures will always have penalties attached to them; and it is only by taking a proper view of the nature of the labour, that it can be conducted to a happy issue. There is no one circumstance, that so largely and certainly contributes to divert nature from her proper course, as the persuasion that art can always benefit her —hence, the constant employment of ill-directed manœuvres by an ignorant accoucheur, or midwife. And unfortunately for the interest of humanity, it requires more knowledge *not to be officious* than falls to the share of many of those, who pretend to practise midwifery. It is a vulgar prejudice, that great and constant benefit can be derived from the agency of the accoucheur; especially during the active state of pain; and this feeling is but too often encouraged by the ignorant and the designing, to the injury of the patient, and to the disgrace of the profession. When all things are doing well, the *active* duties of the accoucheur are limited indeed—it is but where the contrary obtains, that he can be said to be positively useful; but to discriminate between the two conditions, requires a thorough knowledge in what a healthy labour consists; and this can only be known with certainty, by him who is well-grounded in the principles of his profession, and who has enjoyed an extensive, or, at least, a well-directed experience.

524. To conduct a labour with safety, the practitioner should be well acquainted with its phenomena; the order or succession of them; be able to decide, when certain of them are wanting, or when others are in excess; to estimate the relative or positive importance of such; the force or effect of each pain; the necessity of preserving or of wasting the waters; the degree of resistance the os uteri, or external parts may offer; the situation of the former, as regards the presenting part; the certainty of the presentation, both generically and specifically; the mode of rec-

tifying any error of presentation in proper time; the capability of doing this with the greatest advantage to the patient and to the infant; and "though last, not least" in importance, he should be able to pursue a firm, candid, and feeling conduct throughout the whole scene, that he may not be betrayed into indiscretion, by the overweening anxiety of the friends of the patient; that he may not lose the important moment to act, from an apprehension that blame may attach upon the disclosure of its necessity; and that the sufferer may derive every advantage his kindness and sympathy can afford.

525. That man is but little used to the exercise of the social virtues, who is ignorant of the influence a kind and feeling conduct has upon his suffering patient—to her, it almost atones for the want of skill or experience: and to deprive her of it, is withholding a right for which nothing can compensate.

526. She is entitled to all the consolation a well-grounded assurance of a happy termination of her sufferings can afford; and this must be offered to her from time to time, that she may profit by its encouraging influence; yet she must not be betrayed into false hopes, by an ill-judged promise of a speedy issue, when the period, from the very nature of the case, must be remote—nothing perhaps is so destructive to confidence, as ill-requited promises of this kind; nothing so sickening to the heart, as "hope deferred."

527. The young practitioner especially, should be very sparing of promises; for it requires long experience to make them with any kind of certainty; and until he possess this, they should be evasively given, that sad disappointment may not ensue. For a woman will support herself with much firmness, where relief is believed to be certain, though it may be distant, while she would flag, under the failure of often repeated promises of speedy relief.* Her mind should be kept as free from anxiety as the nature of her situation will permit; therefore, no conversation should be indulged in, that might for an instant excite her apprehensions —conversation should be cheerful, and free from the idle discussions of danger in similar situations; and it must be as void of levity as of gloom.

528. To the well-bred gentleman, it would be almost an insult to say any thing on the score of decency; but as errors may be unconsciously committed, it may be proper to suggest a few

* Denman.

cautions upon this head that may be important to the welfare of the well-meaning, but inexperienced practitioner.

529. 1st. Let all communications to the patient of a delicate nature, be conducted through the medium of a third person; the nurse, when present, should always be that person; in her absence, an elderly friend.

530. 2d. Endeavour, by a general and well-chosen conversation, to divert the patient's mind as much as possible from the purpose of your visit, when your services are not immediately required.

531. 3d. When your presence is not absolutely necessary in the sick room, be as little in it as will be consistent with your duty—by this you remove restraint; and abridge to appearance the period of your watching.

532. 4th. Should you judge it necessary to ascertain the situation of your patient, let the proposition be made by a third person, as the nurse; let her declare the circumstances which lead you to believe it would be important; such as the length of time the patient has been in pain; the force and frequency of the pains; the evacuations of the waters, if it have taken place; and, above all, the necessity of ascertaining the progress of the labour, and the nature of the presentation.

533. 5th. If, after you have made your examination, you should be importuned for your opinion of the nature of the presentation, and the duration of the labour, do not commit yourself by any positive declaration, unless you are certain of the first, and pretty sure of the latter.

534. 6th. Before you proceed to the examination, let your patient be placed with the most scrupulous regard to delicacy, as the slightest exposure is never necessary; let the light be excluded from the room by closing the shutters if it be day, and by the concealment of it, if it be night. So much for the regulation of the conduct of the accoucheur in his intercourse with his patient; but it is also important that we lay down some general rules by which he, and the patient shall be governed, during the progress of the labour.

535. 1st. The patient is to be forbidden every thing which shall have a tendency to excite the system; she will, therefore, be prohibited wine or any other liquor; or even stimulating food.

536. 2d. She should be directed to keep as quiet as possible;

and the preposterous custom of obliging her to walk the floor with a view to increase the pains when tardy, should be peremptorily forbidden.

537. 3d. Inquiry should be made as to the state of the bowels; costiveness should be removed by castor oil, magnesia, or any other mild cathartic, if there appears to be sufficient time for its operation; if not, let it be effected by a simple injection.*

538. 4th. Her dress should be such as to require no alteration after delivery; therefore, her linen should be so placed, as to be out of danger of becoming wet from the discharges; her petticoat should be without shoulder-straps, that it may be easily removed; and a bed gown should protect the upper part of her body.

539. 5th. The bed should be so arranged as to preserve it with certainty from the discharges; for this purpose a blanket should be folded several times, and placed *beneath* the *under sheet*, at the part of the bed on which the woman will permanently lie; a sheet as often folded should be placed *over* the under sheet, so as to correspond with the blanket below; on this the woman will be placed after delivery.

540. 6th. The woman will be placed for labour upon her left side, at the foot of the bed, in such a manner, as will enable her to fix her feet firmly against the bed-post; her hips within ten or twelve inches of the edge of the bed; her knees bent, her body well flexed upon the thighs; this position will bring the head and shoulders near the centre of the bed; and pillows may be placed to raise them to a comfortable height—the part of the bed on which the patient is now placed, must, like the part on which she is permanently to rest, be secured by folded blankets placed *over* the under sheet.

541. 7th. When the patient is about to be placed for labour, the practitioner should withdraw, and leave this arrangement to the nurse; she should be covered entirely, except her head; if in winter, by a blanket or coverlet; if in summer a sheet will be sufficient.

542. 8th. When about to make an examination, choose the time of a pain for this purpose, and to proceed to it with the most rigid observance of delicacy. To the very young practi-

* A pint of warm water, and a table spoonful of common salt is one of the best.

tioner it may be well to observe, that the chair on which he is about to sit, should be so placed that his right arm should be next to his patient: if this be not attended to, his position will be both inconvenient and fatiguing.

543. 9th. Do not remain with the patient longer than the state of the labour may make it necessary. That is, if it be not well advanced, time should be given for its farther progress; but from time to time, it is well to ascertain its condition; but beware of officious and unnecessary touching, for the reason we have elsewhere assigned. (494.)

544. 10th. Should the pains be efficient, and the os uteri well dilated, or even easily dilatable, and the membranes entire, let them be ruptured by the pressure of the finger against them, or, by cutting them with the nail of the introduced finger. We are well aware that this direction is very far from being in conformity with the opinions of writers upon this subject; but we are sure we have not adopted it upon slight grounds; nor proposed it, because it might quadrate with preconceived notions. In directing it, we are certain that experience is altogether in its favour. And this should be done for the following reasons: first, because, when the mouth of the uterus is dilated, or even easily dilatable, the membranes have performed every duty they can perform; secondly, that very often the advancement of the presenting part is retarded by the strength of the membranes, and the labour much protracted by it; thirdly, that very frequently the pains are increased both in force and frequency, and the labour much abridged by it; fourthly, it gives much greater security to the woman after delivery, by permitting the tonic contraction to take place before it is accomplished, and thus ensuring a more speedy delivery of the placenta, and also very much lessening the risk of after-hemorrhage.

545. 11th. When the head is emerging from under the arch of the pubes, the perineal tumour should be carefully supported by placing the palm of the left hand, with a cloth interposing against it, and retained there until the head is entirely freed from the vulva.

546. 12th. When the head is in this situation, it should not be meddled with; no effort should be made to withdraw the body of the child; its delivery should be trusted to the subsequent contractions of the uterus, that this organ need not be too suddenly emptied, and by this means, give rise to flooding.

Sect. I.—*Of the Necessary Duties towards the Child.*

547. Having conducted the labour to the delivery of the child, new duties immediately commence; the high importance of which, renders it proper we should lay down some rules for their fulfilment.

548. The first great object after the delivery of the child, is to see that respiration is established: for the most part this takes place spontaneously the instant it is in the world; indeed it very often cries, even forcibly, so soon as the head is protruded through the external parts. M. Baudelocque has communicated to the Academy of Sciences, a case of labour, in which the waters being evacuated, the face of the child presented to the neck of the uterus, and the child uttered cries as strong as if it had been delivered. American Journal of the Medical Sciences for May, 1831, p. 248. But if it fail to cry soon after delivery, attention should be immediately paid, that respiration may be established. The child may be born in one of the following conditions. 1st. Feeble, (but not entirely exhausted,) either by the delay in its delivery, by the compression of the cord, or from a delicacy of stamina. These several conditions may be attended by a pulsating cord, or one in which pulsation has ceased. 2dly, The child may be born healthy and with the umbilical arteries pulsating strongly.

549. In cases in which the cord still pulsates, there is but little risk, so long as this action continues; and, for the most part, all that is necessary is, to remove all impediments from the mouth of the child which may interrupt the passage of air to the lungs; or by dashing upon its body some cold spirits or brandy. This almost instantly makes it send forth cries, that are most welcome to the accoucheur, and are the rewards of the mother's sufferings. But should there be no pulsation in the cord, the body flaccid, and, especially, if upon dividing the funis, only a drop or two of black blood issues from the cut, the case is desperate; but not always absolutely hopeless.

550. In this case we should, 1st, carefully remove any mucus that may be in the mouth, faucus, or upper part of the trachea, by wiping as far as we can reach with the little finger armed with a piece of fine dry rag; 2dly, endeavour to inflate the lungs of the child by forcing air into them from our own: this must be

done by holding the nostrils and applying our mouth to that of the child, and forcibly expiring.* If we succeed in passing air

* M. Velpeau recommends this to be done by means of "a *quill barrel,*" a female catheter, or *any kind of cannula*, introduced into the mouth or nostrils, or by blowing with the mouth directly into the air passages. The laryngeal tube invented by Chausier, having the advantage of pretty exactly filling the glottis when introduced into it, is better than the strait cannula of Heroldt; but a simple gum elastic catheter, *an instrument which can be got any where*, is *almost* as convenient: it is introduced *through the mouth*, as far as the bottom of the pharynx; then while it is passed inwards, the point may be bent with the little finger, so as to compel it to enter into the larynx rather than the œsophagus; when fixed right, the nostrils and mouth of the fœtus are closed, and the inflation commenced. However, if it should be admitted that the experiments tried by Winslow, Heroldt, Schule, Viberg, Schmidt, and Beclard, incontestably prove that the liquor amnii penetrates during intra-uterine life as far as the bronchia, it would be useful to free the trachea from it by suction or otherwise, previously to trying inflation; *but there is too much uncertainty upon this point for it to serve as a basis for any practice whatever,*" p. 564. Dr. Meigs' translation.

We rarely meet with an assemblage of directions or suggestions, that contain so little of practical usefulness as we do in the above quotations. First, the kind of instrument to be used upon such occasions is far from being satisfactory; for neither the *quill*, nor female catheter, nor *any kind of cannula*, can be used with any prospect of success, unless one of its extremities pass into the trachea; and this requires no common adroitness to render its location exact, or its operation profitable. But if this difficulty were surmounted by one of these instruments, we are every way certain that violent irritation must ensue, especially from "the quill or any kind of cannula," and this we fear without proportional advantage; for we doubt very much whether the lungs can be inflated by these means without the employment of very many more precautions than are recommended by M. Velpeau. Besides, it would be proper to put every practitioner, but especially the young, in possession of means that can always be commanded, rather than to make him rely upon instruments for this common purpose, that can rarely be procured; but at the loss of so much time that would be fatal to the child—for the loss of five minutes upon such occasions, most commonly seals its fate. For though the "gum elastic catheter may be got any where," (that is, any where in Paris,) the child would often lose its life, were it required to be sent for out of the house; and in this country, nay, even in this city, much time would be lost, were this instrument to be relied upon. The application of the accoucheur's mouth to that of the child, as we have just recommended, is the only means that can be depended upon for the inflation of the child's lungs. Secondly; however M. V. may scout the idea of the trachea being at least partially filled with the liquor amnii, and disregard the precaution of removing it, we do advance upon our own proper experience, that it is an accident by no means of uncommon occurrence; and there is no such "uncertainty upon this point," as to render at all doubtful the practice necessary upon such occasions. For we do farther aver it as our firm opinion and belief, that we have saved the lives of very many children by the plan recommended in our text.

Dr. Patterson, in the "Bridgewater Infirmary Reports," relates two instances of

into the child's lungs, which is easily known by the elevation of the chest; and if the air we have thrown in is not immediately returned, we must quickly expel it, by a gentle, but pretty firm pressure upon the thorax; 3dly, by placing the child's mouth downward, and holding the body and hips higher than the head; at the same time gently shaking the child, so as to disengage any mucus that may be lodged in the trachea: and permitting it to flow from the mouth, by making this the depending part*—then

resuscitation by cold water. As these cases are replete with interest, we shall relate them as noticed in Med. Chirurg. Rev. for August 1833, p. 265.

Case 1.—"Mary O'Brien of Rathkeale, aged twenty-four, in June, 1831, was seized with premature labour of her first child. She stated, she had only reached the commencement of the eighth month of gestation, and attributed her impending abortion to fright. Her pains being slow, after about thirty hours of lingering labour, she was delivered of a still male infant. Immediately on the protrusion of the fœtus, a very languid circulation was perceptible in the funis, and a slight motion of the limbs was observed. Previous to the division of the cord, it was attempted to excite respiration; but the funicular pulse having quickly ceased, the child was removed and subjected to artificial inflation, friction, external warmth, and nasal irritation. There being no appearance of benefit, and ten minutes having been lost in these fruitless attempts, I placed the infant in a tub, and twice dashed over it three quarts of water, the temperature of which was about sixty degrees. On the first dash, a slight convulsive motion of the body was sensibly excited; after the second, the heart and lungs were in evident action, but this was exceedingly weak and tremulous. While the babe was allowed to remain for a few moments in the water, which scarcely reached its ears, the thoracic parietes were subjected to strong friction. In effecting this, the integuments were made to glide, to and fro, over the ribs, so as to excite titillation. Movements of the arms and legs, and active respiration having quickly succeeded, the child was removed from the vessel, well dried, and wrapt up in flannel. It slowly acquired strength and activity, but ultimately, became remarkable for its large size and healthy appearance."

In the second case, there was no appearance of life, yet vitality could not have been long extinct. The funicular connexion was, therefore, speedily separated, and immediate recourse had to cold affusion. At first a momentary shuddering was observed, and, in the next instant, the heart's action was comparatively vigorous. The child recovered, and both are now living.

* We regret to find the following passage in Velpeau's directions for the treatment of children born in a state of asphyxia—"There is no reason to believe that it is either safe or useful to turn the child with its face downwards to force the matters contained in the trachea to escape therefrom." We say we are sorry to observe the above opinion so peremptorily announced; as the authority of M. Velpeau might lead to the neglect of this *highly important*, and in some instances, this *indispensable practice*. I am every way persuaded, that I have preserved the lives of many children by this mode of management, which, without it, would have been lost. And we are altogether as certain, that no possible injury can arise from the practice, unless it be from mal-adroitness in the handling of the

cautiously wiping the mouth as just directed; renew the inflations, and the suspensions alternately, until the mucus flow from the mouth; by proceeding in this manner, I have often had the satisfaction of seeing the child restored, under very discouraging circumstances. It is every way worthy of remark, that owing to the tenacity of the fluid within the windpipe, we cannot at first force air into the lungs; but, by a little perseverance, we overcome this obstacle, and the mucus becomes sometimes so thinned as to flow readily from the mouth, and at once relieves the child. This operation should never be neglected; nor should it be too soon relinquished; especially if we can excite a few pulsations in the heart and in the cord. Both of these should be carefully examined after each inflation: the pulsation of the heart is best detected by placing the ear immediately over its region; that of the cord, by pressing it between the thumb and finger, close to the umbilicus. 4th. By the frequent application of heated cloths: this should be attended to immediately, and persevered in until the last moment of hope. In the August number of the Lond. Med. and Phys. Jour. we find the following notice of a method to resuscitate still-born children, which, from the manner it is announced, seems to be considered as new by the editor: at this, we are not a little surprised, as the plan has been recommended for many years by us, both in our public and private lectures, as well as in the first edition of this work. Many years' experience has confirmed the efficacy of the method, though we lay no claim to the suggestion. We cannot pretend to say, at this moment, from whose recommendation we first employed it; but we are certain, that it has been our method for forty years; and that we firmly believe we obtained it at second hand. But this is of no consequence. Its almost uniform success renders it valuable; and, if it be not generally known, (as would seem to be the case, from the position it occupies in a widely circulating and highly useful Journal,) it ought to be; especially as, agree-

child. We are also persuaded that it is vastly more efficacious, and to say the least, as safe, as the direction he gives immediately before for the same purpose, namely, to cleanse the mouth by a *brush either dry, or dipped in salt and water*, and indubitably more rational and efficient than the one that follows; to wit, "supposing the secundines are either wholly expelled, or on the point of being expelled, and that there should be some pulsation in the cord, I should not object to keeping them for some time in *warm wine and water!!*" M. V. has not told us, however, how the wine and water is to be applied to the unexpelled secundines.

ably to the authority about to be quoted, it has succeeded in some apparently hopeless cases.

Mr. J. Toogood, of London, has related some cases in which he has recovered infants apparently dead, after an unusual length of time. In one case, no effort was made to respire for thirty-five minutes; in another, forty-five minutes had elapsed; in a third, thirty minutes; and in a fourth, the mother's situation was so critical, that the child was not attended to for more than half an hour; it had been wrapped in a cloth and removed to another room. An attempt was immediately made, and in twenty-five minutes signs of life were manifested; and in fifteen more, the child breathed freely. Mr. T. has always succeeded in resuscitating infants who were living during the birth. He puts no confidence in the warm bath, in frictions, nor in pouring stimulants, but endeavours to imitate natural respiration, by placing a napkin over the mouth, pressing out the air from the chest afterwards. When a feeble attempt is made by the child to inspire, the inflation should be made quicker; and afterwards a little aq. ammoniæ or brandy, rubbed over the palm of the hand, and held over the mouth, during the inflation of air, will materially assist the recovery. I much prefer dry warmth as an application to the child's body, to the warm bath which is so much relied on in such cases: I think the latter decidedly injurious, though I cannot pretend to explain why.* Might not a properly constructed syringe be highly useful in removing the obstructing mucus?

551. When the child shows signs of returning life, it is generally by a deep short sob; which may be repeated at longer or shorter intervals; but when we think the interval too long, we should renew the inflations, &c. Should respiration be but feebly restored, we should carefully guard against any thing like fatigue to the child; it should not on any consideration be disturbed, by dressing; on the contrary, it must be carefully placed in such a situation, as will permit the frequent renewal of the warm applications, which are of primary consequence to the well-doing of the child. I have had more than once the mortification to see all my endeavours frustrated, by inattention to my directions upon this point, though given as impressively as I well knew how.

552. 2d. The child may be born healthy and strong, with a

* Does the warm bath invite too much blood to the capillaries of the surface, and thus deprive the general circulation of a quantity that is essential to the well performance of this process?

brisk pulsation in the funis, yet not cry; because a mechanical obstruction from mucus prevents the ingress of air into the lungs. This mucus may be in the mouth or posterior fauces, or it may be in the trachea—if in the first, we may remove it entirely by a piece of fine rag upon the little finger, as just suggested; (550) if in the second, by suspending the child, as just directed, which will seldom fail to give relief, by permitting the mucus to run from the mouth. I do not recollect an instance, where it was necessary to have recourse to inflation if the pulsation in the cord continued; but if it stop before respiration be established, recourse must be had to inflation. When the child is about to make attempts to cry, I often enable it to succeed, by dashing its body with spirit or brandy as directed above.

553. 3d. The child, from being long delayed in the passage, or from having its neck tightly begirt with the cord, may be still-born;* in this case its face will be black, or livid, and swoln—the arteries may have ceased to beat, or they may beat vigorously—in such cases, nothing can save the child from immediate death, but the instant abstraction of blood by cutting the cord† should

* Very little attention has been paid, until lately, to the pathological condition of children who die in a state of asphyxia in coming into the world. It has now attracted the attention of the French pathologists. and some curious facts have presented themselves, especially as regards the state of the liver. Andral says, that "a mechanical cause will sometimes produce a congestive state of the liver during the progress of a labour; and in those children who die in a state of asphyxia, will cause a rupture of the hepatic vessels; and from excessive engorgement an effusion is found on the convex surface beneath the investing membrane of the liver. And Billard has found blood effused into the abdomen, in consequence of this engorged state of the organ.

† Cruveilheir, in his late work, "Anatomie Pathologique, &c.," has distinctly shown, that one-third of the children that are born *still* in the Maternité, die from apoplexy. A quantity of blood is found within the cavity of the arachnoid. Most frequently, however, it is limited to the surface of the cerebellum; sometimes it covers the posterior lobes of the cerebrum. It rarely occupies the ventricles; but the author says, he has seen such cases. In all cases, the arachnoid and sub-arachnoid coats of the spinal marrow were filled with blood, so as to distend the dura mater. The cause of this apoplectic condition, Mr. C. thinks is inscrutable; he rejects the idea of its being caused by the use of the forceps: indeed, he says these instruments, he thinks, frequently prevent it. In this, we heartily concur.

In some cases, there is found a soft tumour of the hairy scalp, which sometimes causes alarm. It is usually situated upon the superior and posterior portion of one of the parietal bones, right or left, as the presentation may have been the first or second presentation. It is owing to an extravasation under the scalp, from the long continuance of pains, when the smallness of the pelvis either relatively or

the pulsation have ceased, we may sometimes still succeed in drawing some blood by forcing it from the cord, and then employing inflations, &c.; if pulsation continue, we must also abstract blood by cutting the cord—the quantity to be drawn must be regulated very much by its effects—when respiration is established, we need draw no more; but until some signs discover themselves of this being about to take place, we may abstract pretty freely, as this process most probably is interrupted by the congestive state of the brain, which can only be removed by pretty ample depletion.

554. When respiration is established, either spontaneously or by artificial means, we apply a ligature to the cord, provided pulsation has ceased in it; but not until then. The best ligature is a portion of a skein of fine thread; if this be not at hand, a piece of narrow tape or flat bobbin will answer perfectly well—it should be applied an inch or an inch and a half from the umbilicus, and should be drawn sufficiently, to make it securely tight—this precaution is necessary, as otherwise bleeding sometimes ensues. We direct the ligature to be applied at this distance, lest bleeding should take place, and sufficient room be not left for a new one between the old one and the belly of the child. We once saw a child die from convulsions, owing to a want of room for the application of a fresh ligature, where the first one had not prevented bleeding, by the second including a portion of the skin of the child within its circle. Madame Boivin directs a careful examination of the cord next to the umbilicus of the child, as it sometimes happens, that an umbilical hernia exists, and the protruded portion of the gut may be included in the embrace of the ligature; she mentions that death was caused in two instances by this cause in the Maternité Hospital. In one of the instances, a portion of intestine was included in the other, a part of the little lobe of the liver. We are aware, that it is con-

positively prevents the face from turning completely into the hollow of the sacrum. It gives the sensation to the finger of the bone being depressed under that portion of the scalp. It requires no particular treatment, as the extravasated fluids will be absorbed in a few days. The tumour may be bathed three or four times a day with cold brandy. Some have recommended opening these tumours, but our experience is in direct opposition to such advice: it rarely takes place, but with the first child. Professor Nægle seems to think that this kind of tumour is almost always present; but this is far from being the case: indeed, it never takes place, but when there is considerable opposition to the passage of the child's head. It never takes place in an easy labour.

sidered a work of supererogation to apply a ligature to the cord, by some: but this precaution, in our opinion, should never be neglected; for it is not true, as the advocates for this carelessness declare, that "after the child has breathed, and respiration is well established, the circulation in the umbilical arteries never returns;" for we have repeatedly witnessed the contrary. We have witnessed several nearly fatal instances of hemorrhagy from the umbilicus, where it has been thought that the vessels had been properly protected against this accident. And we find the following interesting case related by Mr. Waller, in the London Medical and Physical Journal for February, 1829, Vol. lxi. No. 360. New Series, Vol. i. No. 32, p. 121.

555. "In one instance there was repeated hemorrhage from the umbilical cord, which so weakened the infant that it died in a few days. This, I apprehend, must have arisen from disease of the arteries, as there was no less than six ligatures applied, and by three different persons, (myself among the rest,) notwithstanding which, however, the bleeding recurred at intervals, and the blood was observed to issue not from the part at which the ligature was applied, but from the extremity of the funis." Is this not an instance of a constitutional disposition to hemorrhage rather than one of diseased arteries? The cord should be cut by a pair of scissors,* half an inch at least beyond the ligature—it

* Formerly many prejudices existed on the subject of cutting the navel; and even the instrument with which this should be performed. Alphonse Le Roy is, however, the only modern I know, who seriously recommends attention to this point. He directs, that "we should not cut the cord, but when the pulsation in the cord has nearly ceased." And adds, that, "as regards the moderns, respecting the cutting of the cord, all is negligence or want of care. But among the ancients, it was an act that had its rules, nay even laws; and among certain people, even now, much precaution is exercised.

That "the ancients never employed instruments made of iron to cut the umbilical cord; for," adds he, gravely, "it is very dangerous, in this operation, to do so within the tropics. For if we apply a microscope to the cut portion of the cord, we shall find particles of the metal oxydized, or rusted; and these are more numerous between the tropics, than in other climates. These particles exert a deleterious effect upon the wounded cord, which, in hot climates, is destructive to the whole economy of the child."

"It was," continues he, "with a view to avoid these dangers, that Moses ordered circumcision to be performed with a sharp-edged stone. And the Jews in all countries, without understanding the reason which governed their lawgiver, abide with great exactness to his precepts, and never employ instruments made of iron or steel."—*Medicine Maternelle*, pp. 6 and 7.

It would be no ways difficult to perceive too much refined speculation in these

is never necessary to place two ligatures, except there be twins—or the cord very large. In this case, Mauriceau advises the application of two ligatures, as the cord shrinks from the knot, and thus causes a bleeding; which occasionally causes death—indeed, it is best not to do so;* as the evacuation from the open extremity of the cord will yield two or three ounces of blood sometimes, which favours the contraction of the uterus, and the expulsion of the placenta—it favours the contraction of the uterus, by the vessels of the placenta emptying themselves, and thereby diminishing its bulk; this reduction proves a general and grateful stimulus to the uterus, and promotes its contraction; this contraction acts upon the placenta, so as to disengage it from its surface, that it may be expelled soon after the child is born.

Sect. II.—*The Unassisted Delivery of the Placenta.*

556. After the child is separated from the mother, it is to be given to the nurse, and removed from the bed-side—the next duty is to deliver the placenta—but before this is attempted, we should first ascertain the condition of the uterus, by examining it through the parietes of the abdomen, by placing a hand over its region. This examination will discover this organ in one of two conditions: namely, contracted, or not contracted. If the first, the placenta may be delivered, provided it be loose in the vagina, by tightening the cord with the left hand, and tracing it with the fore-finger of the right to the placenta, which is to be hooked with the introduced finger, and gently drawn by the cord with the other hand, until it pass through the os externum —we should then grasp it with both hands, and give it several

opinions; and no ways difficult to account for Moses employing for this purpose a stone instead of iron; and as easy to prove, that in this and many countries, a well-tempered knife is employed for the purposes of circumcision, instead of a rough-edged stone. We have frequently seen this operation performed, and it has always been with a knife of steel. Nor is it reasonable to suppose that Moses could have been aware of oxydized particles being left by the knife, even if it were a fact; as the microscope is necessary to their detection.

* "No harm can possibly arise from the application of two ligatures, and we consider it the safer practice." (Lond. Med. and Phys. Journ. Aug. p. 145.)

I regret that the gentleman who honoured this work with his notice, did not state why two ligatures were safer than one. An experience of more than forty years, has not furnished me with an instance, in which inconvenience has resulted, where only one has been applied.

twirls, to twist the membranes, that they may be entirely withdrawn from the uterus—the advantages of this proceeding are, we prevent a terrible stench; and occasionally, alarm; for we have known them, when about to escape from the vagina some days after delivery, to excite great terror in the patient and her friends; by their being mistaken for a falling down of the uterus.

557. When the placenta is delivered, it is to be carefully placed in a basin, or pot, and removed—the abdomen should again be examined; should the uterus be well contracted, which is easily determined by its hardness and size, we should entertain every reasonable hope, that every thing is going on so far well; but should the uterus be found flaccid, brisk frictions with the open hand, with the occasional grasping pressure of the fingers, should be instantly made. Should these be successful, the uterus will be found to harden gradually, as well as to diminish in size under the hand. At this moment, perhaps, there may be a sudden discharge of coagula from the vagina, accompanied by some pain, which very frequently alarms the inexperienced practitioner, and renders him doubtful of the propriety of the plan he is pursuing; but so far from being alarmed at this circumstance, he should felicitate himself upon it; as it is a proof that the uterus is contracting. These frictions should, however, be continued for some time; or until the uterus becomes very hard, and appears to be disposed to retire within the pelvic cavity.

Sect. III.—*Of Putting to Bed.*

558. As the patient is usually delivered at a part of the bed distant from where she is to be permanently placed, the removal from one to the other, is familiarly called "putting the patient to bed." This operation consists of several details, which are highly important to be well understood by the young practitioner; though the executive part does not strictly belong to him. "Putting to bed" consists, first, in the entire removal of all the wet things that may be about the woman, and substituting dry ones; secondly, in her being lifted or slid into the place where she is permanently to lie; thirdly, in the application of a bandage over the abdomen, pinned as tightly as the patient can bear with comfort.

559. It may be asked, is every woman to be put to bed so soon as she may be delivered? certainly not; the "putting to

bed," must be governed by the following circumstances: first, if the patient be very much exhausted by the severity of labour, by a previous flooding, or any other circumstance that may render her feeble or faint, she must not be removed until she recover some of her spent strength, should this require even several hours; secondly, should the patient, from her exertions during labour, or the heat of the weather, be in a perspiration, she should not be disturbed until this has gone off entirely; thirdly, should there be too great a discharge or flooding, the patient must not be moved, until this is much diminished or stopped. But if neither of these conditions present themselves, it is best to direct the patient to be put to bed immediately, as I am persuaded she will bear it better than if suffered to remain any time.

Sect. IV.—*Of After-pains.*

560. Almost every woman, with the exception, perhaps, of the first child, is tormented with what are called "after-pains," these pains are produced by the renewal of the alternate contractions of the uterus in consequence of coagula forming from time to time within its cavity, and now being foreign bodies, efforts are made by the uterus to expel them. These coagula are formed by the blood flowing into the cavity of the uterus from the extremities of the vessels exposed by the separation of the placenta—and they will form in proportion as the uterus may be more or less disposed to contract; therefore, it is found, that the more this organ is closed by virtue of its tonic power, the fewer and milder will be the "after-pains:" hence these pains rarely occur with the first child, as the tonic power of the uterus is then more perfect, or less exhausted. There is a circumstance attending these pains, which deserves notice, though it may not be easily explained; which is, their almost uniform renewal, upon the application of the child to the breast, though they may have been suspended even for hours; and the aggravation of them, if they have not been interrupted.

561. These pains, by the old women, are considered useful, because they are almost always accompanied by the discharge of coagula, which they say must come away, and on this account they oftentimes refuse to give any thing for their relief. But this doctrine, were it strictly acted upon, would subject the patient to most unnecessary tortures, sometimes for many days to-

gether—I have ever regarded after-pains as an evil of magnitude, and always endeavoured to prevent them as quickly as possible—they interrupt sleep, which is at this time of especial importance to the exhausted woman, as well as needlessly excruciate the body.

562. I generally prescribe camphor for their relief, and in the following form:

℞. Gum Camph. ʒj.
Sr. vin. rect. q. s. f. pulv.—Adde
Pulv. G. Arab. ʒij.
Sacch. alb. ʒij.
Aq. font. ℥vj.—M.

Of this a table-spoonful is given every hour or two, or oftener, until the pains cease—or, I sometimes give ten grains of this substance finely powdered, every hour or two, mixed in a little sirup of any kind: this appears to answer nearly as well as the julep just mentioned.

563. The camphor, in two or three instances, has disagreed with the patient, though it relieved the pain. In these cases, it produced most distressing feelings: as headach and delirium; but they soon disappeared upon desisting from it*—it has a decided advantage over opium; for in many instances it can be given where the opium is altogether improper, either from the state of the pulse, or idiosyncrasy; besides, it more certainly gives relief. I think, however, that the relief is not quite so permanent as that procured by opium; and, therefore, we are sometimes obliged to repeat it more frequently. Should the camphor fail to give relief, or constitutional peculiarity render it improper, we must give the opium; provided, there be no circumstance of the system, as fever, which would make it inadmissible. I have in a few instances been obliged to let blood, from the high action of the arterial system, before I could venture upon the use of opium; but these cases are rare, though of high consequence to be well understood in practice. I have, however, given the camphor, where I dared not venture upon the opium; and this is important to know, as preparatory bleeding always excites alarm.

564. We often find patients who cannot use opium in any of

* In one case, the unpleasant symptoms were so excessive, as to oblige me to give an emetic of ipecacuanha. As soon as the camphor was thrown up, the patient was relieved. But these are extremely rare cases; and were I to institute a comparison, I would say, that opium disagrees five times as often as camphor.

its common forms, in consequence of its disagreeable after-effects; such as severe headach, and distressing sickness of stomach.* But these consequences may very often be prevented by mixing the laudanum with vinegar instead of water; or using the acetated tincture of opium, or black drop. When used, it should be in such doses as will quickly make an impression upon the system—I, therefore, always begin with a dose of fifty or sixty drops, and repeat it every half hour or hour, until relief is procured: if the black drop be made choice of, it should be given in half the quantities of the laudanum. If this plan be persisted in for a short time, it will certainly relieve the patient.†

565. I have met with a few cases of a very distressing kind of after-pain, which I have not seen noticed by writers. It is a most severe and constant pain at the very extremity of the sacrum and coccyx; it begins the instant the child is born; and continues with the most agonizing severity, until overcome by the rapid and liberal use of camphor and opium. It is declared by the patient, to be vastly more insupportable than the pains of labour; for it is as intense, as unceasing.

566. The first case of this kind I met with, occasioned me no little anxiety and perplexity, from its novelty and severity. It was the case of a young lady with her first child—it began most severely, the instant the child was born; and its intensity was such as to make me abandon the delivery of the after birth, to attempt the relief of my patient. I at first looked upon it as only a protracted after-pain, which I had not expected to encounter with a first child. I immediately gave a large dose of laudanum, and repeated it in fifteen minutes—and at the end of the second quarter of an hour, as there was no abatement of the suffering, I again gave the laudanum—these doses procured no relief, in half an hour more; though, in the three portions exhibited, more than two hundred drops of this medicine were given

* Dr. Hare has pointed out a method of freeing opium from its narcotine; and laudanum is now prepared from the residue, with the great advantage of not producing any, or but in a very slight degree, the distressing effects of that made in the common way. We regard this among the happiest and most important discoveries of modern chemistry.

† Until the "denarcotized laudanum" gets into general use, as it certainly will, the plan recommended in the text may be pursued with advantage. Dr. Physick informs me, that he is in the habit of using a few grains of the carbonate of soda or potash, with the same good effects.

in the course of half an hour. I was obliged now to suspend the repetition of the laudanum from a fear of an excess in its exhibition; but, to amuse the patient, I gave her a few drops at a time, disguised by a little of the compound spirit of lavender, until an hour had passed. By this time the patient thought herself easier; but still suffered very severely—I now ventured upon another full dose of laudanum, and sat down to deliver the placenta: this was readily done, and it was found lying loose in the vagina; but its expulsion procured no abatement of suffering —in a word, nearly five hundred drops of laudanum were administered, before complete relief was obtained. After she became easy, she had no subsequent return of this pain; nor did she suffer in the least, from the use of so large a quantity of laudanum, in so short a period.

567. On the termination of her next labour, as she had most anxiously and fearfully anticipated, the same violent distress assailed her. I instantly gave her, at one dose, one hundred and twenty drops of laudanum; this was repeated in twenty minutes —in the mean time, the placenta was spontaneously discharged. This second dose afforded no relief; and I was then induced to administer the laudanum at short intervals, which, as before, eventually overcame the pain—as happened on the former occasion, she suffered no return of this pain after it had once been subdued.

568. On her third confinement, I was again distressed to find a recurrence of this terrible agony. I had, however, from my former experience in her case, anticipated this event, and had at hand the following julep:

℞.	Gum Camph.	ʒii.
	Sp. vin. rect. q. s. f. pulv.—Adde	
	Pulv. G. Arab.	ʒiii.
	Tinct. opii acetat.	ʒiiss.
	Ol. Juniperi.	gut. xx.
	Sacch. alb.	q. s.
	Aq. font.	℥vi.—M.

Of this, a large table spoonful was given about fifteen minutes before I expected the child to be born, by way of making some impression before the pain should come on. The child was born rather within the period I had calculated; and, as on the two former occasions, the pain commenced the instant it was in the world; another spoonful of the julep was immediately given, and

this was followed by another in fifteen minutes more, which decidedly abated the severity of the pain; and I had the satisfaction of seeing it entirely conquered, in an hour from its commencement; a period less by one half than on the former occasions. The placenta came away without trouble, as it had always done before. I thought it evident, that the combination of camphor with the opium was highly beneficial; and, perhaps, they were aided by the oil of juniper, which I had frequently found very useful in controlling after-pains. On her fourth delivery she was managed precisely as above related, and with the same happy effects.*

569. The second and third cases which fell under my notice, were treated with camphor julep, as above stated, and with the same happy results. Can this pain be considered as a modification of after-pains? I am disposed to think not; as its commencement is too sudden, and its duration too uninterrupted; besides, after this pain has ceased, the part no longer becomes the seat of pain, should after-pains follow. That strange variations in the seat of after-pains occasionally take place, I have witnessed; but in all the aberrations I have observed, the change of seat did not alter the character of the pains—for they were all of the alternate kind, and as regular as if they were seated in the uterus. One of the most remarkable I remember to have met with, was where the after-pains were located in the right knee; and this peculiarity in seat obtained with every child this lady bore.

570. I am of opinion, however, that much may be done before the labour is finished and immediately after, to abate the severity, if not to prevent the occurrence of "after-pains." During labour, 1st. By rupturing the membranes whenever the mouth of the uterus is sufficiently dilated to permit the head to pass, that the tonic contraction may immediately ensue. By this the following advantages result as regards the prevention of "after pains:" by the absence of the waters, the uterus is reduced in size, in proportion to the quantity discharged; this gives greater strength to this organ, and enables it to contract with more force; and consequently, will more certainly diminish the size of the vessels exposed by the separation of the placenta; as these, by pouring out blood, give rise to these "after-pains;" (193) again, it prevents

* This lady suffered in the same manner with her fifth and sixth children.

the uterus from being too suddenly emptied; and thus inducing a state of atony in it—for it must be remembered, that "after-pains" are never more certain, nor ever more severe, than after a very quick labour. 2d. By permitting the uterus to finish the labour after the head is born; in doing this, we have an assurance that the tonic contraction has regularly followed; as the uterus becomes more and more empty; for, were this not the case, the alternate contractions would be feeble and transitory, as always happens, when the shoulders are about to be hurried through the external parts and the uterus too suddenly emptied; in this case the tonic contraction of course is imperfect—consequently, the vessels exposed by the separation, and departure of the placenta, are not pressed upon by this power; and consequently blood is freely poured into the cavity of the uterus, where it coagulates, and obliges the uterus to throw it off by repeated contractions. 3d. After the delivery of the child, we may do much by not attempting the delivery of the placenta until we have ensured the tonic contraction of the uterus, by frictions, as before recommended, over the hypogastric region; and after its expulsion to repeat them, until the uterus seems to retire considerably within the pelvic cavity. Burton's success, (though I should be but little disposed to follow his practice,) in preventing "after-pains" by the introduction of his hand to the fundus of the uterus, and kept there until he found this organ contracting upon it, depended precisely upon the principle I have been endeavouring to establish; namely, promoting as quickly and as certainly as possible the tonic contraction of the uterus.

571. It must, however, be admitted, that neither camphor nor opium is always successful in calming these distressing contractions of the uterus; they sometimes persevere with great obstinacy, even after the faithful trial of both these remedies; while in other cases no form of opium can be made to suit the peculiar idiosyncrasy of the patient, and to some the camphor is altogether disgusting. In such cases it may be highly useful to exhibit the hydrocyanic acid, as recommended by Dr. Von dem Busch, of Bremen.

572. As this is a new remedy in spasms of the uterus; and as its effects were highly satisfactory to Dr. Von dem Busch, I will subjoin the two cases related by him in Hufeland's Journal for September, 1826.

573. Case I. "Madame N., aged thirty-three years, was safely

delivered in the morning of the 14th May, 1821. A short time, however, after she was put to bed, she was attacked with a violent vomiting, and severe after-pains. She was visited an hour after by her physician; she had by this time vomited five times, a green, bitter substance like bile; the pulse was full and hard; the abdomen tense, and tender to the touch; the skin hot, but the face not flushed; tongue clean, and thirst great. The patient complained of pains in the uterus; and when they became very violent, they excited nausea and vomiting. The lochia was very sparing. Three drops of the hydrocyanic acid, mixed in an ounce and a half of sirup, was given by tea-spoonfuls every hour. In the evening the pulse had softened, the patient had vomited but twice; the abdomen still painful to the touch; nausea continued, but the after-pains were much less frequent. The lochia returned in abundance during the night of the 14th, and the day of the 15th, after having repeated during the day the mixture; it was now given but once in three hours, as the pains had entirely disappeared. This lady has been twice delivered since; in both she again suffered with after-pains, but not accompanied by vomiting; in both cases she was relieved by the same remedy."

574. Case II. "Madame S., a well made robust woman, twenty-eight years of age, was always delivered safely, and without any thing unpleasant following her labours. But in her fourth delivery, the after-pains were so violent as to cause convulsions. The lochia were nearly suppressed; the pulse full and hard; the tongue clean, and the skin hot; pressure on the hypogastrium increased the pains. Four drops of the hydrocyanic acid in two ounces of sirup were ordered; of this a tea-spoonful was given every hour and a half. The pains subsided presently, and by the time the mixture was finished, they had ceased entirely; in the mean time the lochia returned to their healthy condition."*

Sect. V.—*The Regimen During the Month, &c.*

575. There is no vulgar error more replete with mischief, than that which supposes the woman to be in a state of great debility after delivery, and to require the most nourishing, and the most stimulating things to overcome it—hence the destructive use of ardent spirits, wine, cordials, spices, animal food, and broths, &c. &c., during the whole period of confinement. We cannot too de-

* Révue Medicale, &c., for April, 1827.

cidedly set our faces against such practices; and, with a hope of preventing them, we should give to the nurse the most explicit directions, as well as the most positive injunctions, with regard to the regimen of the patient, before we leave the room; and we should see, as far as may be in our power, that our instructions are carried rigidly into execution.

576. Should we have reason to suspect, or have positive evidence that they have been departed from, we should at once, without regard to the nurse's experience or respectability, tax her with this disobedience—for it must be recollected that the whole responsibility lies with the physician; and if he do not support his instructions with proper firmness and dignity, and see them correctly acted upon; if he pass in silence the improper conduct of the nurse, he will constantly and evermore have his directions infringed, and his skill and experience, be they what they may, rendered nugatory.

577. But to return to the regimen proper in the month; I desire that the patient *may not have* animal food, or broth from any animal substance; that she may take neither distilled nor fermented liquor; nor any stimulating tea "to dispel wind," or "to allay after-pains," or to "promote the lochia." I direct she should have gruel of oat meal, tapioca, sago, panada, mush and milk, rice and milk, tea, coffee, or very thin chocolate. I permit to be seasoned with sugar, a little nutmeg, or lemon juice, any of the articles above enumerated, in which it would be proper to use them. I permit the use of toast-water, barley-water, molasses and water, or balm-tea as common drinks; or, what is very often extremely grateful to them, apple-water—that is, a roasted apple or more, well beaten with water, and afterwards strained. This diet is to be observed strictly until after the fifth day; or until the milk has been freely secreted, and is easily extracted—after this time, all things being right, she may be allowed the soft ends of four or five oysters, or a poached egg, a little chicken-water, beef-tea, or vegetable soup may follow, until about the tenth day: then, (nothing forbidding,) she may indulge in a little ale, or porter and water at her dinner; and if requested, a table-spoonful of white wine may be added to the gruel, &c. This plan I persevere in until after the fifteenth day; at which time she generally may take some animal substance, such as broiled or boiled chickens; birds of almost any kind; a piece of beef-steak, mutton-chop, &c.

578. The child should be put to the breast, as soon as the mother is well-rested from the fatigue of labour: this is an important direction; and should not, without very strong reasons, be neglected: the advantages of this early application of the child to the breast, are, first, the child keeps the faculty, (if we may so term it,) of sucking, with which it is born; for if this direction be not attended to for several days, because, as they say, the mother has no milk, it will lose this faculty, and much trouble will be given to recall it—I have witnessed this consequence but too often; secondly, the child's mouth will, by its gentle action upon the nipple, gradually stretch it, and accustom it to extension, before the breasts become tender, and swelled with milk; thirdly, by the nipple being stimulated by the child's sucking, an earlier secretion of milk takes place; fourthly, the milk will be drawn off nearly as fast as formed; which will prevent the pain so constantly arising from its accumulation, as well as the swelling, which is almost sure to follow its formation. This swelling, if it take place, shortens the nipple, and renders the extraction of the milk more difficult; this increases the efforts of the child, by which means the external covering of this important little organ becomes irritated, and sore, to the great misery of the mother, and serious injury to the child; fifthly, the early secreted milk possesses a purgative quality, by which the infant profits, by its assisting in carrying off the meconium. We are persuaded, that the "milk fever," as it is called, is nearly altogether of artificial origin, and can almost constantly be prevented. We have been always attentive to this subject, and an ample experience leads us irresistibly to this conclusion. In a practice of more than forty-five years, we have witnessed but two instances of inevitable "milk fever." In both of these, every pains were taken to prevent the formation of this fever; but in neither did a severe antiphlogistic treatment prevent it—in both of these cases, the patients were extremely prone to fever from very slight causes. We therefore cannot agree with Professor Dubois, that the "milk fever" is a legitimate traumatic fever occasioned by the separation of the placenta from the uterus.*

* In the Baltimore Medical and Surgical Journal, Vol. 2d, page 497, there is an account, with a drawing, of a female who had three distinct mammæ differing in nothing from each other, either in appearance or in functions, except that the supernumerary mamma is one-third smaller than the two natural breasts.

579. It should be directed, that the room be constantly ventilated; the curtains, if there be any, should always be open; and where we can command, we should forbid them altogether, in warm weather. They should never be drawn because the woman sleeps, or with a view to protect her from a draught of air; for the woman can sleep without closed curtains; and can by other contrivances be protected against a current of air. She should have a plentiful change of cloths, that the lochia may not become offensive; and, after the third day, she should be permitted to wash the parts with warm water, two or three times a day —this last permission is a great comfort to a delicate woman; and should not under frivolous pretences, be denied her.

580. On the third day, if the bowels have not been previously opened, the woman should take some mild purgative; castor oil is the best; but where this is disgusting, or should disagree, the calcined magnesia, the sirup of rhubarb, or a little senna tea, will answer extremely well. Should the "after-pains" be very obstinate, and not yield to the common remedies, the castor oil will be found to be the most useful purgative; and has this very decided advantage over every other, perhaps, that, in cases of great pain, laudanum can be administered, if it be judged proper to exhibit it, without interrupting the operation of the oil, though it may retard it a little. A strict attention should always be paid to the state of the bladder—we should never forget to inquire whether the patient has passed water; if she has not, we should immediately order such remedies as are best calculated to remove the difficulty—the most certain is sp. nitri. dul. (sp. ether. nit.) in tea-spoonful doses, repeated every two hours, until relief be obtained; for, if this fail, it is more than probable no other diuretic will succeed; we are then under the necessity of employing the catheter: nor should we delay its employment too long. I have seen much misery, and perhaps danger, in permitting the bladder to be too long distended.

581. The following is the mode of using this instrument—the patient must be placed at the side of the bed; the bed should be protected by a folded blanket being placed under her. The finger should be lubricated with a little sweet oil or lard, and the hand introduced under the bed-clothes, so as not to occasion the smallest exposure—the patient's knees must be drawn up, and the labia separated by the points of the fingers—search for the inferior edge of the symphysis pubis under which the urethra

immediately runs—press this part gently with the point of the finger, and the meatus urinarius will be, for the most part, readily discovered—when found, keep the extremity of the finger upon it; then, with the other hand, guide the catheter along it until it reach the orifice, and is inserted into it; press it gently backwards and upwards, until it enter the bladder; and prevent the immediate issue of urine, by placing a finger upon its external extremity until the vessel is handed, which is intended to receive it —this is to be so placed, as to prevent the escape of the urine upon the bed—when all the water is discharged the instrument must be withdrawn. This operation must be repeated until the bladder regains its powers, and is capable of discharging its contents—it sometimes becomes necessary to do this twice or thrice a day; but in general once will do.*

Sect. VI.—*Of the Lochia.*

582. The discharges which take place from the uterus after delivery, are called the "lochia"—they proceed from the extremities of the vessels exposed by the separation of the placenta; and will of course be in proportion to the extent of surface this mass may have occupied in the uterus; the number and size of the vessels concerned; and the degree of contraction the

* "If it were our only purpose, in such cases, to prevent the woman from suffering pain from the suppression of urine, it is true that the use of the catheter once a day 'will generally do.' But we have a much more important object in view,—to prevent the natural power of the bladder from being so far weakened by over distention, that a very considerable time may elapse before the patient is able to pass her urine. We have known the use of the catheter necessary for many weeks, in consequence of the contractile power of the bladder having been lost, from the water not having at first been drawn off more than once in twenty-four hours. We differ, then, from our author, upon this point. The introduction of the catheter once a day, ought never to be considered sufficient."—(*Lond. Med and Phys. Journ.* Aug. 1825, p. 148.)

The reviewer says that he and I differ upon the subject of the catheter—but we certainly do not: on the contrary, we perfectly agree. My practice ever has been, to draw off the urine, whenever distention was evident; did this require three or even four introductions of the catheter, in twenty-four hours. But more cases have occurred, where once a day was sufficient, than where a more frequent use of the catheter was necessary; nor have we ever witnessed a case, which required a continuance of this operation beyond a week. In Europe, this necessity is both more frequent, and much more urgent; owing to the much greater frequency of contracted pelves, or tedious labours.

uterus may exert. Should the tonic contraction of the uterus be imperfectly performed, a hemorrhage will be the consequence, but when more perfectly contracted, the discharge will not amount to a flooding; but would yield the lochia. Much consequence is attached to these discharges; the good old gossips of almost every country are of opinion that the freer they are produced, the better; and are always better pleased with a superabundant, than with a sparing quantity—it is proper, therefore, before we proceed farther, that we determine the real nature of this evacuation.

583. As the uterus never contracts with so much force immediately after delivery, as to stop the mouths of all the exposed vessels, a quantity of blood must necessarily proceed from the extremities of such as are open; and this quantity will be in proportion to their capacities, though perhaps these vessels are now much reduced in size; while, on the other hand, the quantity discharged, will be constantly diminishing in the exact ratio of reduction, it must therefore follow, there is no definite quantity to be evacuated, but will entirely depend upon the contingency of the more or less perfect condition of the tonic power of the uterus. This being true, it must also follow, that the quantity discharged will differ in each individual, and in the same individual at each particular labour; consequently, there can be no rule upon the subject. The absolute use of this evacuation appears to be, to give the uterine vessels an opportunity to contract, by gradually relieving themselves of the engorgement to which they have long been subject from pregnancy, by pouring a part of their contents into the cavity of the uterus; and that, so soon as this engorgement is relieved, all the purposes of the evacuation are answered; for the extremities of the vessels, which open into the cavity of the uterus, cannot return the blood they contain into the circulation, as their anastomoses are destroyed, by their terminations being opened; they therefore part with it, and thus form the lochia; and they will do this, until the tonic contraction is so perfect as to shut up their exposed extremities—therefore, as a discharge, this evacuation is of no farther use, than to relieve the vessels of the uterus, and thus indirectly promote its contraction—it may, however, injure by its excess, because, it may produce weakness; but cannot injure by its scantiness, when that is the effect of contraction, since this is an evidence of the most healthy condition of the uterus.

a.—Lochia, Excessive.

584. As this discharge sometimes injures by its excess, and as that excess must necessarily result from a want of due contraction in the uterus, it follows as a consequence, that we always render an important service, when we can increase the tonic powers of the uterus, and thereby diminish the quantity of the lochia. I have for many years acted upon this principle, and have great reason to be satisfied with it. It is very unusual in my practice, to see the lochia too abundant; on the contrary, very little of this discharge is to be seen after the fifth day, and sometimes it is over sooner. I do not, however, say, that, in the cases just alluded to, there is an entire stoppage of the discharge; but that there is a very great abatement of it, both as regards quantity and intensity of colour.

585. The lochia, however, from various causes, will continue for a great length of time, nay, during the month, or even longer, to the injury of the patient; in such cases, I have made it a rule, to interfere whenever it has continued with any force beyond the tenth day. I have found this discharge sometimes kept up by a febrile condition of the system, occasioned perhaps by an improper consideration of the case by the friends of the patient, who could not imagine that any other cause than debility produced the discharge in question; accordingly, wine, bark, and cordials, were given, with a view to arrest it, and thus perpetuated the evil they intended to cure. In such cases there are pretty regular febrile paroxysms, especially towards evening; a quick full pulse, with considerable heat of skin—the tongue furred, the bowels oftentimes much confined; a feeble state of stomach, or a whimsical appetite; the sleep disturbed and unrefreshing; pain in the back, and an occasional discharge of coagula. In treating this case we shall have much prejudice to overcome—for that fatal term "*debility*," which has slain its thousands, and its tens of thousands, is always employed against us; "the patient is so weak, she wants something to strengthen her," is the unceasing cry of friends upon such occasions; and, though they will reluctantly submit to your directions, they will rarely coincide with you as to their propriety. We must not, however, give up principles, to satisfy the crude notions of friends, upon a point so important to the welfare of the patient; we must prescribe agreeably to the opinion we have formed of the nature of the case, after

a due consideration of the symptoms, and condition of the vascular system.

586. In cases like these, we cannot expect to abate the discharge, until we shall have subdued the febrile condition of the system; we are, therefore, to begin by taking a few ounces of blood, and opening the bowels freely, with any of the neutral salts either alone or combined with magnesia; by confining the patient strictly to a vegetable or mild diet, and the entire proscription of wine or any other liquor, and all stimulating teas, such as chamomile, centaury, or mint. By forbidding all exercise, or even sitting up in severe cases; by placing the patient upon a mattress, instead of a feather bed; by ordering the parts to be bathed with cool water, three or four times a day. After having bled and purged as just suggested, we may give from a grain and a half to two grains of the acetate of lead, every three or four hours. The following is the formula I generally employ for such purposes:—

℞. Sacch. Saturn. ℈ij.
Gum. opii. gr. vi.
Conserv. Rosar. q. s.
M. f. pil. xxiv.

587. During the exhibition of the pills, the state of the bowels should be regarded; and should the febrile condition not be subdued by the evacuations already employed, we should again have recourse to the lancet. It will rarely happen that this state of circulation will not yield to this plan; indeed, the very omission of the improper articles which were before employed, will very much aid us in our endeavours. After the system is freed from fever we shall find advantage in the employment of some gentle tonic; the elixir vitriol, in doses of fifteen or twenty drops, three or four times a day, in strong red rose-leaf tea, properly sweetened, is a very useful, as well as grateful remedy.* It must be observed the acetate of lead may be suspended, if it does not considerably check the discharge in the course of five or six days; and should always be intermitted when the vitriolic acid is given. Should the complaint not yield to this plan in a reasonable time,

* A pint of boiling water is to be poured on a half ounce of red rose leaves, and allowed to stand; strain, as wanted, when cold—sweeten to taste, and give a wine-glassful, with or without the elixir vitriol as may be judged most proper. If used without the vitriol, it may be given every two hours.

I have seen much advantage from injections per vaginam, of the acetate of lead and water, a little warmed, and thrown up, three or four times a day; this should be made so as to have ten grains of the acetate to an ounce of water.

588. At other times the system seems to be rather prostrated by the profusion or the long continuance of the discharge; when this is the case, the elix. vitriol., as above directed, should be given freely; the tincture or extract of rathana will also be found highly useful, as will sometimes the alum whey: the parts should be bathed, as just directed; the patient should be kept quiet, as above suggested; and the injections be had immediate recourse to; this plan will generally prove quickly serviceable.

589. There is another condition of the lochia, which is not only very troublesome, but from its offensive smell extremely loathsome; this is where the coloured discharge has disappeared, but is succeeded by a profuse watery one, of a greenish colour; and from this circumstance is called by the old women the "Green water;" it is frequently so acrid as to excoriate the parts over which it flows; and always extremely offensive in smell. The woman is almost always much debilitated by this noisome evacuation; and, in some few cases, I have seen a kind of hectic disposition supervene.

590. The system almost always in these cases requires the use of tonics—the decoction of bark and the vitriol, should be freely given; and the patient allowed a generous diet, with either ale or porter in moderate quantities at dinner. The parts should be frequently bathed with lukewarm water; and injections of strong chamomile tea, in which a piece of quick-lime has been slacked and permitted to settle, should be used per vaginam, four or five times a day—these injections, like all others I have directed for the vagina, should be a little warmed. This complaint, as far as I have observed, has always yielded to this plan of treatment. A chloruret of lime or soda is also highly useful, and may be used per vaginam three or four times a day.

591. It may be thought incumbent on me to say something, on that condition of the lochia, where this discharge is too sparing—but I have already said, I look upon this as a favourable sign in the ordinary course of things: when it exists as a symptom of another complaint, that complaint must alone be considered.

Sect. VII.—*Of the Attentions necessary to the Child.*

592. Hitherto we have been considering the attentions due to the mother, together with some of the most common complaints attendant upon delivery: I shall now say a few words upon the demands of the child. Under this head, I shall first direct its washing: 2dly, dressing of its navel; 3dly, the medicines proper to purge off the meconium; 4thly, its food.

a.—Of Washing the Child.

593. The child's body, when first born, is almost always covered with a tenacious unctuous substance, which is rather troublesome to remove. It has been analyzed by Vauquelin and Buniva, and found most to resemble fat—they have not discovered any thing which readily unites with it. It is, however, ascertained, that hog's lard answers better than any thing else that we know of to detach this substance from the skin. When the lard has become well incorporated with this coating, it can be removed by strong warm soap-suds, and a piece of flannel, or sponge. It should be carefully taken off at the first washing, as it sometimes incrusts, and excoriates the skin, when this is neglected. The child, during this process, should not be unnecessarily exposed—if it be cold weather, it should always be washed near the fire; and should be carefully dried after the washing. Many nurses have a preposterous, and, as I believe, an injurious practice of using brandy or some other liquor, when they wash the child; and especially when they wash the head—this practice should be forbidden; as I am persuaded that it has oftentimes been very injurious to the infant. After washing, the next thing to be attended to is,

b.—The Dressing of the Navel.

594. Much ceremony was formerly observed in the performance of this office; but it has now become a process of great simplicity, among the more enlightened part of the civilized world. It would be idle to enter into all the details suggested by ignorance, or craft, for the due performance of navel-dressing. A variety of medicaments were, and in some places are still in use for this purpose; all of which, to say the least of them, are alto-

gether unnecessary. The only necessity for applying any thing to this part is, to prevent the dead navel-string from coming in contact with the skin of the child; it would therefore matter not, as regard the cord itself, if it were not touched by any dressing. Dress it as we may, it will always separate at the umbilicus; and our whole care should be to prevent this putrefying mass from excoriating the skin. The fact just stated, is highly interesting; and it is especially so, since M. Billard, (Maladies des Enfans,) has very satisfactorily proved, that, notwithstanding that the process of separation is not the mere departure of a dead mass, from a living one, as has generally been believed. He declares that the cord of a living child does not putrefy, but that it first dries or shrivels up, and that this drying is an evidence that its vitality is the cause of it, and for the following reasons: 1st. That the drying of the cord, only takes place during the life of the child. 2d. That if the child die before the cord is separated from the child, that this drying is immediately suspended. 3d. If the cord remain fresh, or the drying only commenced, the child has either been still-born, or has lived but a very short time. 4th. If the cord has become slightly dry, or even completely dry, the child has lived at least one day. And farther, in proof of this being a living process, he states, that the cord of a dead child never dies—it only putrefies. Though the dressing of the navel is not strictly the accoucheur's province, nevertheless, as it may be required of him, he must not be ignorant upon a subject, to which the world at large, attaches so much consequence, however lightly he himself may think of it.

595. All that is necessary, is to pass the remaining portion of the cord through a hole in the centre of a piece of linen rag, seven or eight inches in length, and about two and a half broad. After the cord has been passed through, it must be enveloped entirely by a bandage of ten inches long, and rather less than an inch broad, by passing it round, its whole length. The pierced piece of rag is placed lengthwise, as regards the child's body; on this the wrapped up cord is laid, with its extremity towards the breast of the child; the inferior portion of the first rag is then folded over it, and the whole secured by the belly-band; after this, the child is dressed as fancy directs, or as circumstances may force.

c.—Purging off the Meconium, &c.

596. The propriety of purging off the meconium is no longer doubted, especially in hot climates. It has been found very much to lessen the mortality among the new-born children of the West Indies, and other similar climates, by preventing that very common, and but too often fatal disease, called the jaw-fall, or the trismus nacentium. This practice should never be neglected, even in this country. It might be difficult to say exactly, of what the meconium is composed; but it would seem certain, that bile is one of its constituent parts, agreeably to the analysis of Vauquelin; and the other, in part, is, the recrement of the secretion from the mucous membrane of the intestines; the finer parts having been absorbed.* This substance is sometimes of very considerable tenacity, and a dark bottle-green; this colour is derived from the admixture of bile.

597. For the purpose of carrying off this substance, it is found that a little molasses and warm water is generally sufficient; I always order two or three tea spoonsful to be given at once, and repeated from time to time, if the previous quantity be not suffi-

* It would seem to be proved, by a case related by Dr. Rees (on Costiveness, p. 137,) on the authority of Mr. Hallam, that the meconium is a combination of the recrement of some digestion, perhaps bile, and a peculiar secretion from the intestines themselves, (but, perhaps, especially of the colon) and not the remains of food taken in after birth, or as some have supposed, of nourishment received by the mouth during the stay of the fœtus in utero. Mr. H. delivered a patient of a "fine muscular, fat, and healthy child, which had an impervious œsophagus, so that no food ever passed into the stomach. The child lived thirteen days; but was so wasted that its skin hung like a loose garment, and could be lapped and folded over its limbs. At first the child discharged the usual quantity of meconium from the bowels, and afterwards had, during eight days, one or two *alvine* discharges, in quantity, colour, and consistence, not distinguishable from the stools of children who take food in the usual manner. After the eighth day the fecal discharges became more scanty and less frequent, but they continued to the last."

A similar case has just fallen under my own observation. A child was born with every external appearance of healthy conformation—but upon attempting to give it a little molasses and water it had nearly strangled. Upon looking into its mouth, it was discovered there was no vault to it; neither was there a vestige of soft pallet. It never swallowed a drop—indeed, every attempt was followed by such terrible distress, by the fluid passing into the trachea, that the trial was abandoned. It lived, however, ten days—became extremely emaciated and very yellow; yet it passed the meconium freely; after which the evacuations were yellow.

cient—this rarely fails; especially when aided by the early secretion of the mother's milk.* Should this fail, the child becomes fretful and uneasy; and oftentimes will moan, or cry loudly; become sleepy; frequently start; and by its complainings, show itself to be ill at ease. When we find this to be the case, we should inquire into the state of the evacuations; and if these have not been sufficiently liberal, which is easily determined by their continuing to be tenacious and green, we should direct a small teaspoonful of warm castor oil: this must be repeated, should it not operate in a couple of hours; or a mild injection of warm milk and water with some molasses dissolved in it, will answer very well to aid the action of the oil.

598. I must earnestly protest against the use of any acrid purgative for the purpose of carrying off the meconium—nurses and midwives are too apt to employ them, when this part of our duty is left to their discretion. I, therefore, make it a rule to point out the remedy to be employed, without permitting them the smallest latitude. Their ignorance frequently betrays them into indiscretions; and this sometimes to the absolute injury of the child. I have too frequently witnessed this, not to feel it a duty to inveigh most pointedly against it.

599. Dr. Buchan, in his pleasant and useful little work, "Advice to Mothers," relates an anecdote so much in point, that I am induced to quote it at length: "I was once sent for by an intimate friend to look at a new-born infant, who appeared to be in great agony. I soon discovered the complaint was the belly-ache, caused by some injudicious purgative. As the midwife was present, I remonstrated with her on the rashness of thus tampering with an infant's delicate constitution. She replied, in a tone of self-sufficiency and surprise, 'Good God! Doctor, I only gave the proper medicine to carry away the *economy*.'" I should have smiled at her affectation of medical cant," adds the Doctor, "and her ridiculous attempt to catch the word *meconium*, had not the serious mischief she had done repressed every motion of laughter." A medical friend told me some time since, that he was called to a newly born infant, which was dying in great agony from a dose of aloes exhibited by the midwife.

600. There is oftentimes much mischief arising from over-

* This is an additional argument, for the early application of the child to the breast; since the first secretion of the breasts is of a purgative quality. This product is called "Colostrum."

purging newly born infants; they, therefore, not only require very mild remedies, but proper doses of such remedies—and there is one rule by which these exhibitions should always be governed; namely, that so soon as there is a change in the colour of the evacuations, all purgative medicines should instantly be withheld.

d.—Of the Retention of Urine.

601. It very frequently happens with newly born children, that they do not pass their urine for many hours after birth; or so sparingly as to afford little or no relief: this creates a great deal of distress, and if not relieved by proper means, will sometimes occasion death. A very remarkable instance of this kind fell under the notice of my friend Dr. Parrish, and myself, which I will give in detail. Mrs. —— was delivered of a healthy baby on the 15th June, 1822. On the 20th, in the evening, the child showed uneasiness, and on the 21st it cried violently, and continued to be much pained until the 25th. A variety of simple means were ineffectually used for the discharge of the urine, which had been either very sparing, or entirely suppressed, most probably from the 20th. On the morning of the 25th, at ten o'clock, we found the abdomen very much distended, even to the scrobiculus cordis; the skin shining, and the superficial veins very much enlarged. The child had several very sparing stools, of a very dark green colour: two tea-spoonsful of castor oil were given in the course of the morning. At half past one o'clock, P. M., Dr. Parrish introduced a small flexible catheter and drew off at one time eighteen ounces and a half of a straw-coloured urine. At seven o'clock of the same day, the child appeared perfectly relieved; it slept soundly, and took nourishment freely; two more tea-spoonsful of castor oil had been given since the visit at noon, but without moving the bowels, nor did any water pass. As the child was easy, it was permitted to rest without disturbance.

602. From this time until it died, (on the 28th,) the water was regularly drawn off by the catheter; the child, however, gradually declined from our first visit; and its mouth became very sore; leave was not obtained to examine it.

603. I have recorded this case for its great practical importance. I have seen several instances similar in their general appearances, and terminations; which gives me strong reason to

believe, that these children may have died of a retention of urine, though I was assured that they had regularly passed water—such was the statement for awhile, in the case just related; and perhaps there may have been a small discharge, as always happens when the bladder becomes excessively distended. This often takes place in the adult, from the same cause; it is, therefore, a good rule to inquire into the state of the bladder, in all the complaints of very young children; and we must not be too easily satisfied with the reports of the nurse upon this subject—I now make it my business, whenever I have any suspicion that the urine is not freely evacuated, to examine the abdomen of the child, especially if it be reported to be swelled. I carefully examine the region of the bladder, with a view to detect any distention of it, that I may take measures accordingly. I am disposed to believe, had the catheter been introduced twenty-four hours sooner, nay, perhaps twelve, the infant, whose case is related above, might have been saved—but as there was a constant assurance that water passed, there was no suspicion of the state of the bladder.*

604. I suggest, as a matter of probability, that the cases I have witnessed of death in very young children, where the abdomen has been much swoln; the superficial veins passing over it much distended, and very conspicuous, were similar affections of the bladder, though no such suspicion was entertained at the time. How far a distended belly, (indeed, almost to transparency,) with greatly enlarged veins, may serve to distinguish this state of the urinary organs in very young children, must be left to future observation. I felt it a duty to express this impression, with a hope it might awaken attention in those, whose province it is to witness many cases of sickness; especially in very young children.

* "The introduction of the catheter is spoken of, in the case of a child ten days old. We never have had occasion to employ the instrument at so early an age, and fear that its employment is more easily described on paper than carried into execution in practice, particularly in the male." (*Lond. Med. and Phys. Journ.* Aug. p. 149.)

In a case similar to the one which gave rise to the above observation, it may be asked, what other resource does our art afford? I have not declared, nor even insinuated, that the catheter should be used upon slight occasions; but where the suppression is confirmed, and where every usual expedient has been resorted to, and has failed, should we suffer our patient to die, because the introduction of the catheter is difficult?

Sect. VIII.—*Of Food for the Child.*

605. The mother very rarely has her breasts furnished with milk, at the birth of the child; for the most part, there is an interval of several days, before it is supplied in sufficient quantity to sustain the infant—it is, therefore, supposed, that the child would suffer severely, did it not receive nourishment by other means, until the mother is enabled to *provide* for it. Accordingly, an ample bowl is prepared by the nurse; and the stomach of the child is crammed to regurgitation, with a tenacious paste, called pap, or panada. This is repeated with such mischievous industry, as to throw the poor infant into violent agony; unless its stomach revolt at the unmerciful invasion, and rejects it by a violent effort, and thus averts the impending mischief. Nature seems to have endowed the stomachs of children with a discriminating power upon such occasions; and most happy it is for them that she has been thus kind; for, were it otherwise, many would die in a few hours after birth, from absolute repletion.

606. It appears that the kind nurse has but one rule, by which she regulates the feeding of a newly born child; which, is, to pour food down its throat until its stomach can hold no more; it is then permitted to rest a short time. But the delightful task of cramming is again resumed, especially if the poor babe cry: it is now imagined to be again hungry, and again its feeble powers of digestion are unmercifully taxed. This addition of food, to the great surprise of the anxious nurse, does not quiet its complainings; and its uneasiness is now attributed to "wind;" and the unfortunate child is next obliged to swallow some stimulating tea, or *liquor*, until farther distention, and perhaps intoxication, are added to the already almost bursting stomach. It is then rudely jolted on the knee, until a kind vomiting comes to its relief; or until the bowels, rapidly and profusely discharge their contents, or until convulsions close the scene.

607. Let us consider for a moment how small the stomach of a newly born child is; and how little will put it upon an uneasy stretch—passive, during the whole period of utero-gestation,*

* Dr. C. Lee has been making some interesting inquiries into the nature of the digestive process in the fœtus while in utero, and upon which, he has come to the following conclusions: that "there is a digestive process carried on in the upper intestines of the fœtus, similar to that which takes place after birth; and that the

and contracted to its minimum size; it is no sooner born than it is obliged to submit to be suddenly distended to almost giving way, from mistaken zeal. Can it then be a matter of surprise, that so many children are subject to pain, spasms, convulsions, and even death, a few days after they are born?

The stomach of the fœtus is never required to digest any thing while in utero, as it is necessary it should do so for its own support, as the blood of the mother is every way ample for this purpose. This circumstance would seem almost proved, by the experiment of Dr. Blundell upon a dog. He supported a dog for three weeks, by injecting every day or two a few ounces of blood into the jugular vein.—*Princ. and Prac. of Obstet. p.* 96.

608. What is the proper food for a child at this period?—or should it have any? There can be no objection to nourishment from time to time meted in proper quantities, and composed of proper materials. It must be recollected, that the nearer we follow nature in such cases, the nearer we approach to what is right; nature provides milk as early as circumstances will permit, and milk only—so, on our parts, we can imitate her providence sufficiently near, to prevent mischief; and only milk should be given, until the mother herself be capable of furnishing adequate supplies. The article I am in the habit of recommending,

nutrition and growth of the fœtus, are chiefly, or, perhaps, entirely effected in this manner." He has ascertained, that "the stomach of the fœtus, from three to nine months old, invariably contains a transparent mucus and acid fluid, but never the smallest admixture of albuminous or nutritious matter, while, on the other hand, the upper half of the small intestines always contains a yellowish or orange-coloured pultaceous mass, which, in appearance, as well as chemical composition, resembles exactly the chyme of the adult; in a word, that it is nearly pure albumen. The contents of the lower half of the small intestines contain a much smaller proportion of albumen than those of the upper half, and the matters gradually assume more and more the characters of the contents of the large intestines, in proportion as the distance from the valve of the colon diminishes."

A fluid resembling that contained in the duodenum has been detected in the hepatic ducts of the fœtus; from which it is inferred, that the liver of the fœtus secretes the nutritious matter. This conjecture appears to be strengthened, from the great comparative size of the liver in the fœtus; and that this organ has never been found wanting in any case of monstrosity yet examined.—*Lond. Med. and Phys. Journal, for September,* 1827.

These facts show us how extremely small and unused to distention the stomach of the new-born child is; and warn us to be cautious not to put it too suddenly upon the stretch. They put to flight, besides, the agency of the liquor amnii in fœtal nutrition; and satisfactorily account for the recrement, called "meconium."

is, cow's milk diluted with one-third water, with the addition of a little loaf sugar. Of this, the youngest child may take a few tea-spoonsful at a time, and this to be repeated as occasion may require.

609. The vulgar judge of the nutritious quality of a substance principally by its density; hence, they are opposed to the simple food just recommended, because it does not possess this quality; and they insist upon improving it, by the addition of some farinaceous article, but by which it is sure to be deteriorated: for almost all the children who partake of this *improved* substance, are sure to be afflicted with green and watery stools, if not with a full crop of aphthæ. But, so soon as the mother is able to supply the demands of her infant, it should be confined to the product of her breasts, and to that alone, cæteris paribus.

610. Many of the preparations in use as nourishment for young children, cannot be too strongly condemned; such as crackers and water boiled together, and sweetened; or bread, water, and sugar; than which nothing can be more ungenial to the infant stomach—for these masses begin to ferment the instant they are received into the stomach. Green and watery stools, amounting in fact to diarrhœa, colic, sour eructations, or throwing up their milk strongly curdled, are almost the constant result of their employment. Besides, we must object upon general principles, to the use of any substance which needs to be made so warm as to require tempering for the child's mouth, by first entering that of the nurse. This is a horrible practice, and cannot be too severely reprobated. The child is thus obliged to take into its ill-confirmed stomach, food, not only improper in itself, but which has the addition of a rank saliva from the nurse's mouth.

611. Much care, we grant, must be taken in warming the food of the child, lest it be overheated, and its mouth made to pay the forfeit of the nurse's carelessness; but this can be done without any previous mouthing.

CHAPTER XV.

ON NATURAL OR UNASSISTED LABOUR.

612. The classification of labours is altogether arbitrary; scarcely two writers agreeing upon the same arrangement.* The object of every classification is to aid the memory by tracing analogies; to establish general rules from which particular ones may be deduced, and for the convenience of description. Now, these ends appear to be answered by almost any division that we may adopt, starting with some general definitions, and making every thing, as far as may be, conform to the generalization. There cannot, therefore, be any one employed which may not be liable, some to more, and others to fewer, exceptions. I have carefully considered them all—some I would reject for their learned parade, without corresponding perspicuity; others, for their complication, and the want of harmony in their parts; others, for their multiplied distinctions without essential differences; and others, for the incorrectness of their definitions; experience being constantly at variance with them.

613. The one in my estimation least liable to objection, is that of Baudelocque—I am persuaded that more correct practical notions can be collected by a proper study of his arrangement, than from any other; and I am also certain, that the younger practitioner well acquainted with his system, when placed at the bed-side, will give a more correct view of any given case; will feel less embarrassment in deciding on the proper mode of treating that case, and will commit fewer mistakes in the absolute management of it than from the study of any other classification.

* Hippocrates made only two classes, the natural and preternatural; Denman divides them into four classes; natural, difficult, preternatural, anomalous or complex; Hamilton follows the division of Denman; Burns divides them, natural, premature, preternatural, tedious, instrumental, and complicated; Baudelocque into three classes; natural, manual, and instrumental; Dubois, Desormeaux, Boivin, Lachapelle, agree with Baudelocque, but include face presentations with the natural; Conquest, Dewees, Blake, and Merriman, divide them into natural and preternatural; Davis divides labours into natural, preternatural, complex, and instrumental; Ryan into natural, preternatural, manual, and instrumental."—*Prin. and Prac. of Obstet. p.* 211.

In my view, it is as perfect as the nature of things will permit; and I, therefore, from acting under it for many years, have adopted it. "In pursuing this plan, I shall constantly feel that I am abridging the labour of the student; removing many of the difficulties of the young practitioner; and confirming the observations of the experienced."*

614. A number of circumstances must concur that a woman carry her child to the full period of utero-gestation, and then give birth to it with the least possible trouble and risk. To secure the first, she must be free from every cause capable of exciting the uterus to action; or at least to that degree of action that would terminate in labour. And, for the latter, there must be present in the uterus itself, a healthy disposition to action; and that disposition manifested previously to the commencement of labour, properly so called, by the subsiding of the uterus lower in the pelvis; by a secretion of mucus; by a kindly disposition in the circular fibres of the uterus to relax, that the longitudinal need not be fatigued by too long acting; and these contractions must be sufficiently powerful to make the child pass through the pelvis. There must also be a disposition in the external parts to yield, without the agency of much mechanical force; there must exist a proper proportion between the opening of the pelvis and the diameter of the child's head; and the latter must be well situated, that it may profit by the proper construction of the former; or, in other words, the great diameter of the child's head must constantly correspond with the great diameter of the pelvis.

615. As all the circumstances essential to an easy and natural labour cannot be *commanded*, it must follow, that there will constantly be deviations from it; and these deviations must be looked upon as so many exceptions to the several presentations, which Baudelocque makes necessary to a natural labour. Baudelocque considers every labour natural, in which the woman might be delivered without help; and makes such consist of four principal presentations; namely, 1st, the head; 2dly, the feet; 3dly, the knees; 4thly, the breech.

616. It would be reasonable to conclude, that the presentations which most frequently occur, are the most natural: now, these are found to consist of, 1st, those cases in which the child

* Though I have adopted Baudelocque's general arrangement, I have not rigorously confined myself to it. This will be readily perceived, from the manner in which I have treated the various presentations.

presents the head; 2dly, those in which the breech offers; 3dly, those in which the feet offer; 4thly, those in which the knees offer.* Each of these general presentations is subdivided and forms varieties.

617. Baudelocque is censured by some for the detail he enters into when speaking of his general presentations, and his subdivisions of them; but in this their censure is misapplied. Every practitioner who is well acquainted with the form and dimensions of the pelvis, with the construction and various dimensions of the child's head, and with the mechanism of each individual labour, will be so far from condemning him, that he will admit that no man can practise with entire success, or complete usefulness, without a thorough knowledge of them. I agree, that to certain practitioners it will not only appear useless, but burdensome—those, for instance, who commit the whole charge of the labour to the management of nature, provided the head present, and this no matter how; and as she is usually successful, never stop to inquire whether they can aid her efforts, or abridge her toils: or those who consider the presentation of any one of the other parts above designated as essentially wrong; and who will, in consequence, wrest from the hands of nature, a labour, to terminate it by force, when she was every way competent to its accomplishment. Against the cavilings of such practitioners, I do not think it worth the trouble to defend him.

618. As regards myself, I am willing to confess, for the knowledge I possess upon the subject of midwifery, I am principally indebted to him: for to him do I owe the principles which rendered my experience profitable; and could I induce others who engage in the practice of midwifery, to study carefully this great man's works, I should benefit society, by rendering practitioners so much the more competent to fulfil the duties they have undertaken to discharge. Entertaining such sentiments of the author I intend chiefly to follow, I shall not deem it necessary to apologize for my choice.

619. In speaking of the presentations of the head, I confine myself, like Baudelocque, to those portions of it designated by

* For the reason just assigned, I have changed the order of Baudelocque's arrangement of the presentations constituting "natural labour." The frequency of the comparative occurrence of the several presentations named above, will, I believe, be found pretty constantly to stand in the order I have now placed them; and this, in my estimation, should be taken as the rule of division.

the name of the vertex or the posterior fontanelle; and to that of the anterior fontanelle; or, in other words, the particular or specific presentation is always indicated by these portions of the cranium. And when neither of these offers, so as to characterize the presentation, the part most easy to touch in the pelvis will always be designated by its own name; and all such will be considered as deviations from the presentations of the head, properly so called.

CHAPTER XVI.

OF THE PRESENTATIONS OF THE HEAD.*

620. Much speculation has been indulged in, to account for the frequency of "head presentations;" which eventually settled down in the belief that it arose from the greater weight of this part of the body, especially in the earlier periods of gestation. The validity of this assumption has been called into question by M. Dubois, in a paper read before the French Academy of Medicine; an analysis of which is presented in the Med. Chirurg. Review, for August, 1833, p. 235. In which, however, M. Dubois has not, in his explanation, in our opinion, been more fortunate than his predecessors; for truly his attempt amounts to no explanation at all. For what explanation is there in ascribing the frequent presentation of the head "to an instinctive choice of the fœtus, by which it could escape from its prison in the most ready manner, as the needle inexplicably turns towards the pole?" He had better have adopted the candour of Avicenna, in respect to the cause of labour, and said that God ordered it, and it was so. The arrangement, for the greater security of the animal to be born, expelled or liberated, is not peculiar to the human race, for it is the same in the inferior animals, reptiles, and the oviparous products. Thus, Virey found, in the multiparient animals, that the snouts or noses were turned, in the horns of the uterus, towards the vulva; in the viper, the mouths of the young were found placed towards the

* Agreeably to Madame Boivin, in the Maternité, of 20,517 children born in that institution, there were 19,810 head presentations.

external parts; so, in the egg, the head of the chick is always directed towards the big end. The same obtains in the ova of fishes; so, also, in the larvæ of insects, the head always escapes first; the chrysalis eats through its shell, and the caterpillar through its silky covering.—(*Dr. Ramsbotham.*)

The frequency with which the head presents, compared with any other part of the body, renders its various positions better known; and also entitles them to be considered as the most natural: yet even head presentations have essential differences, as they are not all equally advantageous. Therefore, each variety should be well studied; its distinguishing marks well ascertained, and its mechanism thoroughly comprehended.

621. These presentations will be divided into six varieties; each of which has peculiar characteristics:—In the first presentation, *posterior fontanelle* is behind the left acetabulum, and the *anterior* before the right sacro-iliac symphysis; the head, therefore, is placed diagonally as regards the superior strait: so also is the case in the second, fourth, and fifth. In the second presentation, the *posterior fontanelle* is behind the right acetabulum, and the *anterior* before the left sacro-iliac symphysis. In the third, the *posterior fontanelle* is placed behind the symphysis pubis, and the *anterior* before the projection of the sacrum—in this, and in the sixth presentation, the great diameter of the child's head offers itself parallel with the small diameter of the superior strait. In the fourth, the *anterior fontanelle* is behind the left acetabulum, and the *posterior* before the right sacro-iliac symphysis. In the fifth, the *anterior fontanelle* is behind the right acetabulum, and the *posterior* before the left sacro-iliac symphysis. The sixth is the reverse of the third.

622. Some have objected to these divisions, 1st, as being perplexing to the memory; 2dly, and this without conveying any essential practical information. To the first, it may be answered, that the whole of them can be learned, by pursuing the course I shall lay down, as quickly almost as they can be read; and the same observation will apply to all the other varieties of natural labour.

623. Let it be remembered; first, that the 1, 2, and 3 presentations of the head, are all represented by the *posterior fontanelle;* and the 4, 5, and 6, by the *anterior fontanelle:* secondly, that in describing these presentations, we constantly follow their numerical order: thirdly, that we always commence with the left

acetabulum; then go to the right acetabulum, and next to the symphysis pubis, whether it be the posterior fontanelle or the anterior, that is to be represented—this will make the first presentation have the posterior fontanelle behind the left acetabulum, the second behind the right acetabulum, and the third behind the symphysis pubis. Then, as I have just stated, the other three take their character from the anterior fontanelle, and follow precisely the same route, or order—of course, the fourth will have the anterior fontanelle to the left acetabulum, the fifth to the right acetabulum, and the sixth to the symphysis pubis.

624. As regards the second objection, that "this division conveys no essential practical information," I can only lament the imperfect knowledge of the objector of what is absolutely required of every one who attempts to pursue midwifery, if he cannot profit, and that materially, by the divisions and distinctions of Baudelocque; for I maintain, that the excellence of one accoucheur over that of another, almost exclusively depends upon the accuracy of his knowledge of the different presentations.

625. I have already earnestly recommended to the inexperienced practitioner, to study the different presentations carefully; and to take the fontanelles, and not the ears, for his guide, (89.) The vertex, therefore, will be distinguished from any other part by its roundness, its firmness, its sutures, and its fontanelle. The particular position of the head relatively to the pelvis, (and this constitutes the species of presentation,) is only to be determined by the position of the fontanelles, and the direction of the sutures: to determine this, however, it is only necessary to ascertain the situation of the fontanelles.

Sect. I.—*Of the first Presentation, and its Mechanism.**

626. In the first presentation, the posterior fontanelle places itself behind the left acetabulum, while the anterior offers before the right sacro-iliac junction: the sagittal suture must, therefore, traverse the superior strait obliquely. For the position of the trunk and other parts of the child, I refer to plate V. and explanation, at the end of the volume.

627. The head of the child, in this presentation, offers itself in

* Of 20,517 head presentations, observed in the Maternité, 15,682 were first presentations.

an oblique position as regards the superior strait; by the contractions of the uterus the vertex is made to sink lower in the pelvis than any other portion of the head, and at the same time places the chin of the child upon its breast. The head descends in this state of anterior flexion, in the axis of the superior strait,* until it is arrested by the sacro-ischiatic ligaments of the left side, the sacrum and perinæum. When the head arrives at the first part, it would remain stationary, did not its relations with the pelvis, at the lower strait, change in such manner as to force the posterior fontanelle to offer itself to the arch of the pubes—in doing this, there is a slight twist or pivot-like motion executed at the expense of the neck, which may be estimated at a sixth or eighth of a circle. During this change in the direction of the head, it must be recollected, that the trunk does not perform a similar movement.

628. In proportion as the head is urged forward, the lamdoidal suture is to be more distinctly felt below the symphysis pubis; and if the head be not unusually large; the pelvis a little contracted; or the sacrum too straight; the centre of the occipital bone will be found to correspond with the symphysis pubis: but if either of these circumstances obtain, it will be perceived to answer to the leg of the left pubis, and ischium. At this moment, the chin of the child, which had hitherto been placed on its breast, begins to depart from it; the vertex advances and separates the external parts, by engaging under the pubes, and rises up towards the mons veneris; the inferior edge of the symphysis pubis answers as a kind of axis for the head to turn on; in doing this, the head describes about a quarter of a circle backward. For the head, in issuing from the pelvis, obliges the chin to describe an extensive curve passing successively over the whole of the central line of the sacrum, coccyx, and perinæum; while the vertex itself passes through but a small space. So soon as the head has escaped through the external machinery, the face is found to turn almost always towards the right thigh.

629. The shoulders are now to deliver themselves; which they do in the following order—the right shoulder advances to-

* It must be borne in mind, that the head of the child never engages in the superior strait, in a perpendicular or vertical position; for this cannot happen, and coincide with the direction of the opening of this strait, since this is at an angle of about 30°, and, consequently, the head must enter this opening at the same angle.

wards the pubes, while the left is placed before the sacrum, and is by the force of the pains made to descend lower and lower until its point issues from the bottom of the vulva, while the right is freeing itself from under the pubes. When the shoulders are delivered, the rest of the body follows immediately.

630. "By following," says Baudelocque, "step by step the course I have just traced from observation, it will appear, 1. That at all periods of labour, the head presents its smallest diameter to the pelvis, and that it passes through it, presenting only its smallest circumference. 2. That it executes three different motions in its passage; that of flexion forward, in the first period; the pivot-like or rotatory motion in the second; and, lastly, that of flexion backward, at the time it disengages from under the pubes." Vol. I. p. 362. See Plate VI.

Sect. II.—*Of the Character and Mechanism of the Second Position.**

631. The mechanism of the second position is precisely the same as that of the first, if we change the position of the vertex, and place it at the right acetabulum, instead of the left. In consequence of the right lateral obliquity of the uterus prevailing so often, and the rectum not passing immediately down the centre of the sacrum, and being occasionally impacted with hardened feces, this presentation is not quite as favourable as the first—but we rarely find in practice any essential difference between them; for we may always control the obliquity of the uterus, by placing the woman upon her left side; and can empty the rectum by an injection, as is my uniform practice, when I find things thus situated. See Plate VII.

Sect. III.—*Character and Mechanism of the Third Position.*†

632. In this presentation, the posterior fontanelle answers to the symphysis pubis, and the anterior to the projection of the sacrum; and where a proper relation exists between the head

* Of twenty thousand, five hundred and seventeen head presentations, three thousand, six hundred and eighty-two were second presentations.

† In twenty thousand, five hundred and seventeen cases, there were but six of this presentation.

and pelvis, this presentation is not attended with more difficulty, perhaps, than the two former positions; provided neither the right nor the left lateral obliquities carry the head from the centre of the pelvis; for the vertex will be found to descend behind the symphysis pubis, while the chin will mount upwards, and place itself against the breast, as in the former cases; in consequence of this, the head will only present its perpendicular diameter to the small diameter of the upper strait; and when the vertex has arrived at the bottom of the pelvis, the occipital bone will be found to offer itself to the arch of the pubes, and will pass through the external parts as in the first and second presentations. The shoulder will now present, but there will be no certainty, whether it will be the right, or the left. See Plate VIII.

Sect. IV.—*Character and Mechanism of the Fourth Position.**

633. This position is by no means so favourable as either of those just described; for the forehead must come under the arch of the pubes, in consequence of the anterior fontanelle being to the left acetabulum, and the posterior to the right sacro-iliac symphysis. In order that the head may pass on, it must descend until a portion of the right parietal bone rests upon the inferior part of the sacrum; when there, the pivot-like motion mentioned (627) in the other presentations must take place, if every thing go on well, and by the same mechanism. This motion, however, in this instance, is such, as to place the forehead under the arch of the pubes, by sliding along the left side of the pelvis.

634. In consequence of the forehead being placed under the arch of the pubes, the anterior fontanelle will be found in the middle of the arch and the posterior above the point of the sacrum. The head being urged by the pains, descends still lower in the pelvis, and makes the posterior fontanelle pass over the coccyx and perinæum; while the anterior and forehead, are confined, as it were, to the arch of the pubes. Indeed, it mounts a

* Of twenty thousand, five hundred and seventeen births of head presentations, there were but 109 of this presentation. We presume this means where the head was delivered without having its character changed or converted into the second presentation, either spontaneously or designedly; as the head must have offered originally much oftener in this position.

little behind the symphysis; as the anterior part of the head has not the same relation to the arch as the occipital region; therefore, the anterior fontanelle becomes almost stationary, while the posterior continues to advance, and stretch the perinæum, which presently slips over the occiput, and retires with its edge to the child's neck, and, like the same part when under the arch of the pubes in the former presentations, becomes the centre of motion, and permits the occipital region to turn backward towards the anus of the mother; at the same time the face disengages itself from under the pubes. In this instance, as in the former, the chin is made to describe a curved line, but in a contrary direction.

635. So soon as the chin is liberated from the arch of the pubes, and appears without, the face of the child, by half a turn, places itself towards the left thigh of the mother; at the same time the shoulders descend, and the left is found under the pubes, while the right moves towards the sacrum, and is first disengaged from the vulva. See Plate IX.

636. This species of labour is necessarily more difficult and painful than those we have just considered; and it oftentimes becomes extremely so, if the head be either relatively or positively large for the pelvis. It requires, in some instances, many hours to accomplish a labour, that would have been speedily terminated, had either of the first two been the presentation; more especially, if resisting soft parts should be added to the other difficulty. Baudelocque thinks that the right lateral obliquity would also increase the evil of this presentation; but this I believe can be surmounted, by placing the woman upon her left side. This labour is always of longer duration than where the vertex presents; and of course the woman's sufferings are increased, in proportion to the duration: now, as we almost always have it in our power to reduce both this, and the fifth, one to the second, and the other to the first, we should always do so when nature does not do it for us. Nor is this change of position of the head an operation of the slightest difficulty to the accoucheur; neither does it cause the smallest pain to the patient; provided advantage be taken of the proper conditions of the uterus, and head of the child, and the state of the labour. For the uterus must be well dilated, the membranes ruptured, the head occupying the lower strait, and the labour active. When these pre-requisites obtain, the point of the fore-finger must be placed against the edge of the sagittal su-

ture either before or behind the anterior fontanelle; and in the absence of pain, this part must be pressed towards the left sacro-iliac symphysis, and maintained there during the subsequent contraction of the uterus. Should this first attempt fail in changing the position of the head, by bringing the posterior fontanelle to the right acetabulum, the attempt must be repeated again and again until it succeed; which it will almost constantly do.

637. I consider a perfect knowledge of this presentation, (for it is far from being unfrequent,) a matter of high moment to the practitioner; and particularly so in this country, where the study of midwifery engages so much of the attention of the medical student, and where every one, almost, who enters upon the practice of physic, must also become a practitioner of obstetrics. So positive an advantage does a knowledge of this presentation, and the mode of reducing it, give one practitioner over the one who may be ignorant of it, that it enables the first to terminate a labour in as many minutes as the other might be hours.

638. So decidedly useful is the knowledge of the fourth and fifth presentations, to the patient, that I hold that man incompetent to practise midwifery, in its best manner, who cannot detect, and change this mal-position of the head, and thus abridge sometimes, by several hours, the misery and pain of his patient. I therefore look upon Dr. Denman's* advice as unfriendly to the improvement of midwifery, when he says, "When the membranes break, if the os uteri be fully dilated, the child, though resting at the superior aperture of the pelvis, either sinks by its own gravity, if the woman be in an erect position,† or is propelled by the continuance of the same pain by which they were broken; or, after a short respite, the action of the uterus returns, and the head of the child is brought so low in the pelvis, as to press upon the external parts; properly speaking, upon the internal surface of the perinæum. In its passage through the pelvis, the head of the child, which, at the superior aperture was placed with one ear to the ossa pubis, and the other to the sacrum, or with different degrees of diagonal direction, undergoes various changes of position, by which it is adapted to the form of each part of the

* Introduction, Francis's ed. p. 282.

† Dr. Denman is certainly wrong, when he supposes that the child's head will sink into the cavity of the pelvis by its own gravity, if the woman be standing; for when she is erect, the head finds a resting-place on the anterior margin of the pelvis. See note to par. 627.

pelvis, with more or less readiness, according to its size, the degree of its ossification, and the force of the pains. *With all these changes, whether produced easily or tediously, in one or many hours, the practitioner should on no account interfere, provided the labour be natural.*"

639. Agreeably to this advice, we are not to interfere, though the head present in either the fourth or the fifth presentation; though we can, by an opportune, and well-directed force, shorten the woman's sufferings perhaps many hours; especially with a first child; and this without offering the slightest violence to either mother or child. Nature, indeed, sometimes, though not sufficiently often, operates this change herself; and is this not sufficient to justify the practitioner to imitate her? I have always done this since I first became sensible of its advantages; a period now, of nearly forty years, unless the labour has been too far advanced to permit a change, which has not been oftener than three times during the whole of the period stated. In doing this, I am well assured that I was but performing a duty, by shortening, as well as moderating the woman's sufferings—indeed, so convinced am I of the propriety and utility of this "interference," that I should hold myself culpable did I neglect to take advantage of this important hint of nature.

640. The propriety of changing this and the fifth position of the head cannot be questioned, when a moment's reflection is bestowed upon its mechanism. Yet neither Dr. Denman, nor any of his friends, appear to have been acquainted with the proper mode of treating these cases. And it is truly a matter of surprise that they should have been unwilling to receive information from their neighbours upon this important point of obstetric practice; for they certainly were in possession of the works of Baudelocque,* in which he so scientifically and successfully treats of this subject. It is true that Dr. John Clarke, about the year 1800, seems to have accidentally caught a glimpse of the proper manner of conducting such labours. I say a "glimpse;" for it was but little more, as he confounds the fourth and fifth presensations with the sixth; and does not appear to think or to know there is a difference in their natures or mechanism. He confesses that chance first led him to the knowledge of the fact, that in some cases this position of the head can be remedied

* Baudelocque was translated by Heath, and published in 1790.

without subjecting the mother to any additional pain, or the child to any kind of danger." He adds, that "every body who has been engaged in the practice of midwifery knows, that if in labour the face of the child lies towards the symphysis pubis, that considerable difficulty is thereby frequently occasioned." Now, this situation of the face constitutes, properly speaking, the sixth presentation, which certainly could not be intended, since he speaks of this position as one of frequent occurrence, a circumstance denied by all the best writers upon the subject. In "l'Hospice de la Maternity," the sixth presentation is acknowledged to have occurred but once in twelve thousand one hundred and eighty-three labours.

641. It is farther evident that he confounds these very different presentations, when he says, "If, on examination, *the anterior fontanelle* be felt, and *the sagittal suture be found running from it towards one of the sacro-iliac joints, or directly towards the concavity of the os sacrum*, there remains no doubt that the face will be born towards the symphysis pubis."

642. Now, the direction of the sagittal suture constitutes two essentially different presentations, and requires very different modes of treatment, as it may be towards the sacrum, or one of the sacro-iliac junctions. Moreover, the fourth and fifth presentations are of comparatively frequent occurrence; while the sixth, as we have just stated, is extremely rare. Agreeably to the same returns above mentioned, in the same number of labours, the fourth occurred forty-times, and the fifth two-and-twenty.

643. Again, Dr. Clarke is not exactly right, when he says, "if the anterior fontanelle be felt, and the sagittal suture be found running from it, (the symphysis pubis,) towards one of the sacro-iliac joints, or directly backwards to the concavity of the os sacrum, there remains no doubt but that the face will be born towards the symphysis pubis;" for the fourth and fifth presentations sometimes reduce themselves to the first and second; a circumstance which cannot possibly occur in the sixth.

644. Again, Dr. Clarke is but partially right when he asserts "it is unnecessary to observe that this alternation will be more easily produced when the face lies towards the groin, than when the sagittal suture runs directly backwards towards the sacrum; *but even in this case* the change may be effected with much more facility than I beforehand supposed it possible;" for we must de-

clare that neither Dr. Clarke, nor any other man, ever succeeded in bringing the vertex under the arch of the pubis, when the sagittal suture ran directly from the symphysis pubis towards the sacrum, as in the case of the sixth presentation. See Plates VIII., IX., X., and also the account of the management of the sixth presentation.

SECT. V.—*Character and Mechanism of the Fifth Presentation.**

645. All the relations of the child's head, and that of the pelvis, are the same in this as in the one just spoken of: we have only to imagine the anterior fontanelle to the right acetabulum, and recollect the mechanism of the fourth vertex presentation, to be in possession of this; but in this presentation a little more difficulty may be experienced than in the fourth, owing to the contingencies, (636) which may make the second not so favourable as the first, as has been already stated. When the head escapes from the vulva, the face will turn towards the right groin. Nature sometimes reduces this case to a first presentation, and thus teaches us a salutary lesson. See Plate IX.

SECT. VI.—*Character and Mechanism of the Sixth Presentation.*†

646. This presentation is of most rare occurrence; having met with but three instances of it; two of which were twin cases; but from the smallness of their heads, they created no delay in the labour. They happened, in both cases, to be with women who had previously borne children. The third instance was under the care of a midwife; but as it was one of much longer duration than the woman had before experienced, and as the pains were very frequent, severe, and ineffectual, my advice was asked. I found the head still at the superior strait; the anterior fontanelle was immediately behind the symphysis pubis; the scalp was very tumid and pushed forward, and downward. I waited for the effects of two or three pains, which I found did nothing more than to push the swoln scalp a little lower in the pelvis, but without advancing the head, though the efforts were very strong. I passed up my hand, and turned the anterior fontanelle towards one of the acetabula, and then committed the

* In 20,517 head presentations, it offered only ninety-two times in the fifth. The remark on the number of 4th presentations, will apply equally well to the fifth.

† Only 2 cases occurred in this presentation, out of 20,517 deliveries.

case to the natural powers; which pretty soon accomplished the delivery.

647. The character of this presentation is exactly the reverse of the third; that is, the anterior fontanelle is placed behind the symphysis pubis, and the posterior before the sacrum. There are two circumstances connected with this position, which render it less favourable than either of the other positions: 1st. The great diameter of the head, being parallel to the small diameter of the upper strait. 2d. The forehead being under the absolute necessity of coming under the arch of the pubes; for in this presentation, we cannot, as in the fourth and fifth, change it to the second or first, as I shall have occasion to observe elsewhere. See Plate X.

648. The occiput, in this presentation, descends along, and before the sacrum, until it arrives at the inferior part of the os externum; pressing the perinæum before it, until it escapes through the external parts; it then turns immediately backward, as described in the fourth and fifth species of vertex presentation.

649. It would be easy to multiply the presentations of the head, as Baudelocque justly observes, were it of any practical importance; but as this is not the case, it would only tend to embarrass, rather than answer any profitable purpose. Mathematical precision is not required in such cases, especially as the mechanism of the labour is not altered; for, when the posterior fontanelle is at all in advance of the sacro-iliac junction, either right or left, it will almost always eventually place itself under the arch of the pubes, and this is all that is necessary.

PART II.

OF LABOURS, IN WHICH THE CHILD PRESENTS THE VERTEX, BUT RENDERED DIFFICULT OR PRETERNATURAL.

650. I now commence, agreeably to the plan proposed, with the consideration of the causes which may render a natural labour preternatural or difficult, but which can be terminated by the hand alone; as well as the mode of operating in such cases. I shall exclude from this division, such causes, which of themselves would render the use of instruments necessary or proper, they being to be considered under another head.

CHAPTER XVII.

CAUSES OF PRETERNATURAL LABOURS.

651. Many causes may render a natural labour, a preternatural one; or it may be essentially bad from the beginning, owing to the untoward situation of the child. They may, therefore, be both accidental, and unavoidable. Among the causes we may enumerate, 1st. Flooding; 2dly. Convulsions; 3dly. Syncope; 4thly. Hernia; 5thly. Obliquity of the uterus; 6thly. Partial contractions of the uterus; 7thly. Compound pregnancy; 8thly. Descent of the cord; 9thly. Too short a cord; 10thly. Bad position of the head; 11thly. Exhaustion; 12th. Hemorrhages from the lungs or other organs.

652. A labour may commence with every prospect of being speedily and successfully terminated; but, after a continuance for a longer or a shorter time, with the fairest promise, the patient may be assailed by some accident, which puts in jeopardy her life, or that of the child, or both, and from which nothing

can save them, but the well-directed and timely interference of art. One of the most common, and at the same time, one of the most alarming, is

Sect. I.—1. *Flooding.*

653. In treating of flooding in this place, we shall confine our considerations to the subject in question; or, in other words, as an indication in a natural labour; and where that indication points out no other remedy than delivery by turning, or other manual interference. A flooding may take place after labour has commenced, under two different conditions of the os uteri: first, where it is but partially dilated, and rigid; secondly, where it is dilated, or easily dilatable.

654. These two conditions are by no means indifferent; they are of great practical importance, and should never be confounded, or overlooked.

655. Should hemorrhage take place in the early part of labour, and before the os uteri is sufficiently well opened for the purposes of delivery, we should not think of immediate delivery; as there can be no absolute necessity for hasty or rash interference while the uterus is in the condition here spoken of, it would be the height of imprudence to enter the uterus by force, for the purpose of turning. Indeed, Baudelocque* says, and I fully concur with him, "Whatever abundance of blood the woman may lose, nothing could justify the conduct of the accoucheur who would persist in endeavouring to deliver without delay;" for it would only be creating new difficulties, instead of relieving the existing one.

656. The mode of proceeding in such cases, is, first, to attempt moderating the discharge, by rest, a horizontal posture, by bloodletting if the pulse be full, by the exhibition of pretty large doses of the acetate of lead, by cold applications, but above all, by the tampon.† Second. By promoting the contraction of the uterus, should the above means fail, by rupturing the membranes, as directed by Puzos; but under the restriction suggested, when treating on this point. See Chapter on Uterine Hemorrhage, "Diseases of Females."

* System, Vol. II. par. 1809.

† In using the tampon, it is never necessary *to stop the mouth of the uterus*, as recommended by Leroux, Baudelocque, and others; it is every way sufficient, that the vagina be occupied by a sponge of a sufficient size—the mouth of the uterus becomes filled pretty quickly by a coagulum, if the tampon is as successful as might be anticipated.

657. Should the hemorrhage take place when the os uteri is well dilated, or easily dilatable, we should proceed to turning; provided the rupturing of the membranes have not abated the discharge. Or, should the flooding have commenced after the waters have been evacuated, if the quantity threaten the life of the mother or child, and the child's head is at or near the upper strait; and provided, also, the natural powers of delivery do not advance the head sufficiently fast to give a promise of a speedy delivery.* Should the signs which would render turning the best mode of terminating the delivery not be present, we must have recourse to the forceps.† The mode of operating with them in particular presentations, will be pointed out under each respective case. See Chapter on Forceps, &c.

* It has been advised by some, when we have so far succeeded in turning as to bring the feet to the passage, that we should wait some time, before we finish the operation. Dr. Davis is the latest authority for this practice: he observes, "It is a fact, which it must have often occurred to practitioners of experience to observe, that the operation of turning is for the most part immediately followed by a cessation of the hemorrhage. The change thus effected on the situation of the child in utero being made, it is generally both unnecessary and improper to proceed hastily to complete the delivery; which, therefore, it would be often much better to delay for an hour or two, to wait a favourable disposition of the soft parts, than to undertake it immediately after having brought down the feet into the birth."—*Elem. Oper. Mid.* p. 160.

I cannot by any means agree to this advice; and for the following reasons:—1st. Because I have never recognised as a fact, that "the operation of turning is for the most part immediately followed by a cessation of the hemorrhage;" that is, the mere change of position of the child; for there can be no possible reason why it should be so, unless it give greater opportunity for the tonic power of the uterus to exert itself; and this can be as certainly effected by simply rupturing the membranes. 2d. In a hemorrhage of such extent as would require turning as a remedy, the patient can never be considered safe until the uterus is empty, that the tonic powers of this organ can effectually arrest the discharge. 3d. After we have been forced to enter the uterus, I believe it to be the soundest practice to finish the delivery, slowly and carefully; especially as I never attempt to turn in such cases, until there is "a favourable disposition of the soft parts" to permit delivery; as I am certain, it never can be absolutely necessary to interfere until then.—*See Chap. on Uterine Hemorrhage; Diseases of Females, by the author.*

† Dr. Davis intimates, rather than enforces the use of the forceps, under circumstances, which my reasoning upon the subject, as well as my experience, leads me to fear; namely, where the head is high in the pelvis. He says, "In cases of hemorrhage occurring at an early period of labour, there could, indeed, be no impropriety in having recourse to the use of forceps of more than ordinary length, provided the state of the orifice of the uterus as to dilatation, was such as to be compatible with the safe employment of any kind of instrument on the principle of the forceps. In some few cases of this description, the fœtal head

Sect. II.—2. *Convulsions.*

658. This alarming disease may attack a woman after labour has commenced, and under precisely the same conditions of the uterus as I have stated above, (655.) Should they attack while the uterus is but little dilated, and rigid, we should not think of attempting the delivery of the child; as it would be as mischievous in this, as in the former case. Our first attempt should be to moderate the force, and diminish the frequency of the convulsions, by blood-letting, and the other means recommended in the chapter upon this subject, until the uterus has become softened, or dilated; then, provided the natural powers be not sufficiently active, or competent to the finishing of the labour, we should proceed to turn.

659. Should the uterus, however, be dilated, or easily dilatable; and the convulsions threatening, especially if the pains are not of sufficient force or efficacy, we should, immediately after a copious bleeding, proceed to the operation of turning, with a view to diminish the injurious tendency of the convulsions upon the head. But should the waters be long drained off, and the head low in the pelvis; and invariably, should it have escaped from the mouth of the uterus, the forceps are exclusively indicated. See Chapter on Puerperal Convulsions.

Sect. III.—3. *Syncope.*

660. I have seen several instances where the pains of labour were regularly followed by syncope. In these cases, this condition of the system did not seem to interrupt the progress of the labour in the slightest degree: this affection was constitutional, and such as would follow, in these patients, from any great excitement or alarm, or from pain or temporary exhaustion.

661. M. Travers says, "a person suffering acute pain, is in no danger of syncope."* This is true during the continuance of

being only about to engage at the brim of the pelvis, there might occasionally be some difficulty in determining on the choice to be made between an operation with the forceps and that of turning."

Now, in my estimation, there can be no hesitation about the choice of means —the forceps must not be thought of, in this situation of the head; turning is the proper remedy; for the hemorrhage will itself remove the only difficulty in this case; namely, the obstinate contraction of the uterus.

* Constitutional Irritation, p. 268. Am. Ed.

pain, for the most part, but there are exceptions; we have seen fainting take place during the extraction of a tooth, and during the cutting in a severe operation. But during labour we have never known syncope to take place during the painful contraction of the uterus, though it may quickly follow the cessation. This, as we have observed, appears to be owing to some peculiarity of the nervous system, and does not interrupt the return of subsequent contractions.

662. In cases like those just mentioned, we never think of interfering with the natural progress of labour. But when these faintings take place where peculiarity of constitution will not account for them; where they are attended with increasing exhaustion; where the labour-pains diminish both in force and frequency; where faintings become more permanent in their duration; and where the pulse flags, or becomes nearly extinct, it behooves the practitioner to discover, if possible, the cause, and as quickly as may be, to remove it.

663. Dr. Davis, (Elem. of Oper. Mid. p. 171,) relates the following very interesting case of syncope. "A poor woman, a patient of the Royal Maternity Charity, under the care of an intelligent midwife, after having been in labour for about five hours, became suddenly very faint upon the bursting of the fœtal membranes, and the discharge of a considerable quantity of liquor amnii, whilst, being supported in a sitting attitude on a chamber utensil, she was making an effort to respond to one of the calls of nature. She was immediately laid down in a horizontal posture; but upon farther adjustment of her person and bed-clothes, she was found to be perfectly dead." "The body of the deceased was carefully inspected on the following day; but no cause could be discovered for the sudden death."

664. An internal hemorrhage* is, perhaps, the most frequent cause of this alarming condition: when it proceeds from this source, it always commences gradually; that is, the debility is not suddenly induced; nor are the syncopes at first profound; but both may increase in proportion to the extent or force of the remote cause.† The abdomen is observed to enlarge; sometimes there

* Baudelocque, System, par. 1113, relates a case of syncope from a very large calculus in the gall-bladder.

† I was called to a poor woman, whom I found dead upon my arrival, from this kind of hemorrhage, joined to an external one—but as the latter was not sufficient to cause death, and as it was declared by the midwife, and the women who were present, that the abdomen was enlarged after the discharge became apparent,

is a slight external hemorrhage, or discharge of serum a little tinged with blood; the pains slacken; and the woman becomes exhausted.

665. In cases like these, there appears to be but one remedy; which is immediate delivery by turning, provided the uterus be in the condition already sufficiently often indicated, to permit this operation; and if not, I am pretty certain there is not that necessity for instant delivery, that would put at defiance the rules I have endeavoured to inculcate against forcibly entering the uterus for any purpose—for it must be recollected, that after labour has commenced, and made some little progress, and especially if the woman has gone to the full period of utero-gestation, the disposition to syncope is oftentimes favourable to the dilatation of the os uteri, or at least renders it so pliant as to be penetrated by a little force—when this is so, turning is the remedy; but we must take care to secure the tonic contraction of the uterus, before we attempt the delivery of the placenta.

666. Baudelocque* relates cases of concealed hemorrhage which are highly interesting, and well worth consulting. From what he relates upon this subject, it would appear that a hemorrhage of this kind may take place long before, as well as near the period of nine months; and that the immense distention which the uterus suffers from the influent blood, provokes it to contraction, and brings on labour-pains. But as the cause which may produce indicative syncopes, cannot always be ascertained; and as it is rational to suppose it is in some way or other connected with labour; it will be well, under proper conditions of the uterus, to turn, and thus remove a difficulty, if not the cause of the faintings. Should these occur when labour is far advanced, or when turning would be improper, the forceps may be used.† (See chapter on Forceps.)

and as this had been arrested by some means or other, I suspected an internal hemorrhage to be the cause of her death. Leave was obtained to inspect the body, and my suspicions were confirmed. In this case the hemorrhage took place some hours after the labour had begun; but there was a suspension of pain soon after, and most probably at the time the hemorrhage took place, as the woman had said she was now easy, and wished to go to sleep.

* System, par. 1081, 1083, 1084.

† I have already remarked, (659,) that turning is never to be attempted, when the head has escaped from the orifice of the uterus.

Sect. IV.—4. *Hernia.*

667. Hernias of long standing, are sometimes in danger of becoming strangulated from the excessive force of labour—if this take place, we are obliged to deliver by turning, when the natural powers seem to be too tardy for the situation of the hernia—the time when this is to be attempted, as regards the condition of the uterus, has already been pointed out. I will, however, illustrate this by the recital of an interesting case. Mrs. —— had laboured under an unreduced umbilical hernia* for eighteen years; it gave her trouble whenever she neglected her bowels, or was imprudent in diet. When I was called to her she was in labour with her tenth child—she was a very corpulent woman, and always suffered from a great anterior obliquity of the uterus; her labours were wont to be both tedious and severe. Upon this occasion, it was uncommonly slow and painful; much uneasiness had been experienced in the hernial tumour from time to time during the whole day, but towards evening, (about twelve hours after her labour had fairly commenced,) it became more and more severe, particularly after each pain—fearing what might happen, I had ordered her a full dose of castor oil, in the early part of the day; and this was followed by a brisk purgative injection; the latter procured a copious evacuation of feces, but the oil had no effect. Vomiting now ensued: this was followed by a disposition to syncope, and other alarming symptoms, arising, as I supposed, from a disposition in the hernial contents, to become strangulated. I mentioned my opinion with candour to the friends of the patient, and proposed immediate delivery as the most probable means of preventing farther mischief, though I confessed I was by no means certain it would be absolutely ef-

* On this subject, Dr. Blundell, says, "the womb, when large, taking its place above the brim of the pelvis, the intestines generally lodge above and behind; so that, if a woman have been labouring under a hernia that is *reducible*, whether *femoral* or *inguinal*, the descent of the gut may be prevented by the interposed womb; and thus it has happened, that women who have been liable to hernia, by a repetition of pregnancy, have been kept, in good measure, free from it: women, however, sometimes labour under *irreducible* hernia of the femoral kind, and when they become pregnant with this disease upon them, there is always a risk of strangulation; the uterus enlarging, presses the intestines backwards and upwards; and of consequence, it gradually brings the gut to its bearing on the upper margin of the orifice of the sac, so that all the symptoms of strangulation are produced.—*Princip. and Pract. of Obstet. p.* 87.

fectual. The os uteri was now sufficiently dilated to permit the operation with propriety; the membranes were entire, and every thing favourable for the attempt. The patient was placed, as will be directed by and by; the hand was passed, the membranes ruptured, and the turning performed in the course of a few minutes with the most entire success; the placenta was delivered in due time. A full dose of laudanum was now given: the vomiting and sickness of stomach were immediately relieved by the delivery—less pain was experienced in the tumour, and all the unpleasant symptoms seemed to vanish after a copious evacuation from the bowels, procured doubtless from the oil, which fortunately had only been retarded, and not interrupted by the laudanum. My patient's recovery was as rapid as was usual with her. She died about twelve years after, of strangulated hernia.

668. Should the symptoms which would render immediate delivery necessary, not occur until the head is low in the pelvis, the waters long drained off, or the head arrested by bad position, or if it have escaped from the os uteri, the forceps are exclusively indicated. (See Chapter on Forceps.)

Sect. V.—5. *Obliquity of the Uterus.*

669. The deviations of the uterus, under the name of obliquities of this organ, have already been pretty fully treated of—(see 298, &c.;) but it very rarely happens that either of them alone is the cause of a preternatural labour, though it may complicate it very disagreeably.* I have but once found it necessary to turn for this cause; and this was in a very small woman, with rather a contracted pelvis, who laboured under the most extensive anterior obliquity I ever remember to have seen. She was placed upon her back, with her shoulders lower than her hips; the belly was supported by a towel, and the hands; but nothing seemed sufficient to make the head engage in the pelvis. The pains were extremely severe, and very frequent; and the poor creature suffered for many hours to no purpose. Seeing no prospect of delivery taking place from the exertion of the natural powers, I thought it best, after due consideration, to terminate the delivery by turning—this was accordingly done, with perfect success.

* See Baudelocque's cases, par. 298.

Sect. VI.—6. *Partial Contractions of the Uterus.*

670. By these we are to understand the contractions of the external or inferior edge of the mouth of the uterus, as well as that portion which, in the unimpregnated state, constitutes the internal edge, or orifice of this organ, round the neck of the child; so as to prevent the descent of the shoulders. The first of these conditions is the most serious in its consequences, because it is more difficult to remedy. In this case the head of the child has escaped through the external ring which constitutes the mouth of the uterus; in consequence of which the neck of the uterus retracts itself behind it, and being no longer stretched by the bulky part of the head, it contracts; and this so strictly sometimes, as to embrace the neck—when this takes place, the shoulders cannot pass the barrier which the contracted neck offers, and they are thereby arrested, and their form is but ill calculated to dilate again the mouth of the uterus; for now, it can only be opened by mechanical means.

671. In the second case, the head remains enveloped in the lower portion of the uterus, (which portion in the unimpregnated state constitutes its neck,) while the internal edge contracts round the neck of the child, but not so strictly; and thus is offered on all sides an inclined plane for the shoulders to rest upon. This contraction is much more frequent than the former; and is, for the most part, the greatest obstacle we have to encounter, when we attempt to turn, after the waters have long been drained off. It will readily be perceived, that it is essential to either of these cases, that the waters be discharged; and, as far as my own experience will justify the remark, neither of these contractions takes place, but after the lapse of a considerable time; at least, to the degree that would seriously obstruct delivery.

672. These cases necessarily result from the constant disposition which the uterus has to return to its original size and shape, after the distending cause is removed; and this, as I have elsewhere observed, is owing to its constant tendency to accommodate itself to the shape and inequalities of its contents, by virtue of its tonic power—hence the contractions in question.

673. When either of these conditions complicates the labour, it will soon become for many hours stationary, or nearly so; and whatever other cause may combine with the existing one, to render immediate delivery either desirable or indispensable, it

will be found almost impracticable to perform it by any means. If we attempt to turn, we shall find it almost impossible to insinuate the hand into the orifice of the uterus, so as to dilate it sufficiently to permit it to pass to the feet; and if we apply the forceps, we can only deliver at the risk of tearing the uterus; especially in the first of these cases. In the second, Baudelocque says,* "though it may in some cases produce as great an obstacle to delivery, it is always easier to overcome it, and the same inconveniences do not result from it; because the head is not so far engaged, and may always be pushed back; which permits us to advance the hand under the uterine circle in question, and dilate it." I do not altogether agree with this high authority on this point; for I have certainly met with this case, where I could not push back the head, and thus dilate the stricture; and also, I have found there was no possible advantage in merely overcoming this resistance by passing the hand through the contraction, so long as the stricture continued in force, after the hand was thus passed. For if the contraction be not entirely removed, or so weakened as to yield to a moderate force, there is nothing gained by bringing down the feet to the orifice of the uterus, or even lower; for the instant the breach descends to this stricture, its progress is arrested by the inclined plane I have just spoken of: and no force that could safely be exerted, will make it pass through this narrowed portion of the uterus.

674. Of the first of these cases, I can find but one upon my records; nor have I any recollection that I have ever encountered more. Baudelocque says he has seen but one; it must, therefore, be of rare occurrence. Of the second I have witnessed many; indeed, I believe it will be almost always found where the waters have been long evacuated, and when the pains are feeble and transitory for many hours after. I have rarely failed to find it, when it has been expedient to finish a labour by turning; where tediousness and other causes have rendered this interference necessary. And it is one of the most usual, as well as one of the most obstinate and insurmountable causes, which oppose turning in the contracted uterus.

675. These cases may be suspected whenever there is no advancement of the labour, though the pains be very severe; and there is neither a contracted pelvis, nor a bad situation of the head, nor a rigidly closed os uteri to account for the delay—

* System, par. 1118.

where, during the pain, the head is found to descend, and gives temporary assurance that delivery will take place pretty soon: but where these hopes are instantly destroyed by the head being quickly retracted, so soon as the pain shall cease to urge it downwards.* And they may be ascertained by passing the hand beyond the head of the child—in the first case the *lower circle* of the os uteri will be found round the child's neck; in the second, the *higher circle* will be found in the same situation.

676. Lest this should not be accurately comprehended, we shall again advert to the neck of the uterus, when this organ is either not impregnated, or not beyond the sixth month—in either case, the neck of the uterus will be found to have two openings, or rather two circles; the one inferior, or that which constitutes the os tincæ; the other superior, and constitutes the upper part of the neck, or the inferior portion of the body of this organ, (107.) At the latter end of gestation, the neck is entirely effaced, (200:) but no sooner is the distending cause removed, than the fundus, body, and neck, set about moulding themselves into their original form; and consequently, in such a manner as will indicate the portion which will ultimately become neck. This being the case, the whole of the portion which forms this part will contract, so soon as the distending cause is removed: now, if the head has entirely passed through the lower circle, this part will contract, because distention is removed; and as the neck is much smaller than the head, it will close round it, and form the first case in question; but if the head is but in part through the lower circle, the upper circle will contract at the part opposite the neck, and form the second case.

677. The management of these cases is by no means so well understood, as to free them from all embarrassment, even to practitioners of considerable standing: this has arisen perhaps from their not having been well described by any author with which we are acquainted, except Baudelocque;† and his account is defective as regards the treatment, as it does not inform us how we are to overcome the constriction, after the hand has passed it; for if we do not find means to relax it, or very much abate its

* This case must not be confounded with that retraction of the head which takes place when the parietal protuberances are about to pass below the tubers of the ossa ischia; and supposed by some to indicate too short a funis—this last takes place only at the last period of labour; whereas the other occurs before the head occupies the lower strait.

† System, Vol. II. p. 111, par. 1117, 1118.

force, the breech cannot be made to pass. I will point out the mode I have pursued in such instances, by relating a case extracted from my "Essay on the Means of lessening Pain," &c. p. 137.

678. "1798, December 18th: I was called to Mrs. Z——, in labour with her third child; she had been in pain for forty-eight hours; waters discharged thirty-six; the uterus well dilated; pains severe, but no advancement of the child; during the pain, the child's head, which was well situated, would be forced down, but as soon as it ceased it would again be retracted; this had been the case many hours before I saw her. In order to ascertain the cause of this delay, I introduced my hand into the uterus, and presently found the cause of the child not advancing; a circle of the uterus had closed between the shoulders of the child and its head, which prevented the former from passing. I bled her to fainting; pains soon came on, and she was quickly delivered."

679. This case terminated without the necessity of turning; but I have not always been so fortunate, as some cases have required this operation, and others the forceps. The value of this case consists chiefly in showing the very decided efficacy of blood-letting, and has been quoted for this purpose principally, as it is the remedy which should always be employed in such cases, and should be carried to the extent mentioned. It is the only remedy with which I am acquainted, that has a decided control over the contracted uterus; it is one almost certain of rendering turning practicable under such circumstances, if carried to the extent directed—a small bleeding in such cases is of no advantage; for, unless the practitioner be determined to carry it to its proper extent, which is a disposition to, or the actual state of syncope, he had better not employ it.

680. Turning must not be thought of in the first of these species, as the head is without, or escaped through, the os uteri; the forceps are the only proper remedy in this case: but before they are employed, the same precaution of an extensive bleeding should be premised, or otherwise the most serious mischief may follow—for either the uterus would suffer a laceration at the stricture, or it would be dragged through the external parts with the child's shoulders.

681. The cases in which I have the oftenest experienced the good effects of blood-letting, were of the second kind of my division; but as I am certain, from what I have seen, it would be equally proper, and equally successful in the first—in reasoning

upon the subject, I should *à priori*, think it would be, if possible, more so in the first than in the second species; as there are fewer fibres concerned in that portion of the uterus which forms the stricture; and besides, we have the most ample experience of its good effects, in the rigid state of the os uteri, before it has become dilated.

682. When bleeding is determined on, the blood should be drawn from a large orifice, and the woman placed upon her feet, if practicable—much less blood will answer, if the bleeding be conducted in this way.

Sect. VII.—7. *Compound Pregnancy.*

683. When pregnancy consists of twins, or of more children, it will be found that the uterus does not, nor indeed cannot, act as favourably for their expulsion, as if there was but one child. The reason of this is obvious even with twins; since, in such cases, the uterus cannot close upon the whole surface of a child at once; its force is consequently exerted in such a manner as that both children must receive a part of the influence; and both of course, will be pressed equally, or nearly so, towards the opening of the pelvis, but in which both cannot engage at one and the same time. This, in some cases, will create a difficulty from the very commencement of labour; which cannot always be overcome by the natural agents of delivery; the labour will, therefore, be protracted, as well as painful; and sometimes no alternative is left but artificial means, to finish the labour; hence, the frequent necessity to interfere—this case will sometimes require turning, at other times merely bringing down the legs, &c.

684. Embarrassment may sometimes be created even in the best positions that twins can take; and this will, consequently, be increased, when they offer untowardly at the opening of the pelvis; when one or both may be hydrocephalic, or have the abdomen loaded with water; when there shall be more than two children; when two may be joined together, creating a monster, &c. No distinct rules can be laid down for the management of such cases: interference almost always becomes indispensable—but the precise mode of acting, must be left very much to the good sense, and discretion of the accoucheur.

685. Independently of the obstacles arising from the compound nature of the pregnancy, or the awkward situation of the children which compose it, this labour, like every other, may

be complicated by any of the accidents already enumerated, and thus require immediate delivery. But should interference be considered indispensable to the relief of the woman, it must not be carried into execution before the uterus is in a proper condition, as has been constantly insisted on, in every other case in which it is necessary to pass the hand into it, for the purpose of delivery. See Chapter on Twins, &c.

686. Should the nature of the case be such as to render turning either improper or impracticable; that is, if the head of the child cannot be easily moved up, in consequence of its being wedged by another child; or so low, that it would be dangerous, after the long escape of the waters to attempt turning; or after it has escaped from the neck of the uterus, we must then terminate the labour by the forceps.

Sect. VIII.—8. *Prolapsus of the Umbilical Cord, &c.*

687. It is a matter of some surprise, that the case now under consideration should not occur more frequently than it does; since, we do not perceive that any part of the economy of labour, or the natural order, or disposition of the fœtus and its cord within the uterus, appear calculated to prevent it; yet, comparatively, a prolapsus of the cord is an event of rare occurrence. With respect to its becoming a case of preternatural labour, it is only to be considered such while there is circulation in the cord; and when there is evidently a risk of this being interrupted, before delivery can take place by the natural agents, in time to save the child. When this occurs, turning may be had recourse to—1st. When the uterus is sufficiently dilated or easily dilatable; 2d. When the the head is enclosed in the uterus, and the waters have not been too long discharged; 3d. When there is no deformity of pelvis to defeat the object. Should the forceps, however, be at hand when the head is low, and the cord in danger of compression, or actually compressed; we should without hesitation employ them. See Chapter on Prolapsus of the Cord.

Sect. IX.—9. *Too Short a Cord.*

688. It is said that too short a cord, either natural or artificial, will interrupt a natural labour, and oblige us to finish it by turning. I shall not positively deny the existence of such a condi-

tion of the cord; but I must say, I have never seen an instance; and also, that I entertain strong doubts of its possibility. See Chapter on Prolapsus of the Cord.

Sect. X.—10. *Of the Bad Position of the Head, though the Vertex may present.*

689. It is not simply because the vertex presents, that this labour is in general esteemed the best—it can only be considered strictly so, when the great diameter of the child's head shall correspond with that of the pelvis, and while this part maintains a certain position in its course, as well as describes a given route, in that course—therefore, the third and sixth presentations must be essentially bad; since with them the reverse of a good presentation obtains; that is, the great diameter of the head offers to the small diameter of the superior strait, in both cases; besides the sixth having the disadvantage of the forehead coming under the arch of the pubes.

690. But if the head present in the best possible manner at the superior strait, it gives no absolute security it shall continue so; since it may depart from the route which is essential to an easy labour. Therefore, the labours in which the vertex presents, may require interference from four different causes: *a.* from the vertex presenting to the small diameter of the superior strait, as happens in the third and sixth presentations. *b.* From the chin departing from the breast too early; though at first a proper relation existed between the head and pelvis. *c.* From the presence of the face; owing to the excessive departure of the chin from the breast, or the retiring of the vertex toward the back. *d.* From some part, as the hand, or arm, accompanying the head; though the latter was at first well situated.

a. Bad Position of the Vertex.

691. In the third presentation of the head, the vertex offers to the pubes, and the anterior fontanelle to the sacrum. Should the pelvis be ample, or the head not too large, which virtually amounts to the same thing, the natural powers concerned in labour will be every way competent to its accomplishment; but should the reverse obtain, great difficulty may be experienced; or the labour may be even impracticable, without extraneous assistance. When

the difficulty to deliver depends exclusively upon position, we have nothing to do, but to change it, to remedy the evil; and then commit it to nature, provided she appear immediately competent to this end—that is, if the pains are effective, and the labour advances with sufficient rapidity to justify its being trusted to the natural powers. (See 694.)

692. When we are about to rectify the position of the vertex, the woman must be placed, as will be directed by and by; the hand introduced into the vagina; the head grasped by insinuating the thumb and fingers within the orifice of the uterus, in such a manner as the fingers shall lie on one side of the head, and the thumb on the other; the head must then be raised, so as to disengage it from the superior strait, and the vertex turned towards one of the acetabula—if the right hand be used, turn it towards the right acetabulum; if the left, to the left acetabulum; and then trust the rest to nature.

693. But should any of the accidents already enumerated complicate the labour, and render delivery immediately necessary, we must turn, and deliver by the feet; provided the os uteri be in a proper condition.

694. If it be the sixth presentation, we must proceed as directed above, (692;) and reduce the situation of the head to either the fourth or the fifth; and then commit it to the natural powers for fartherance. It must be remembered, that when the sixth presentation is changed to the fourth or fifth, we must not attempt its farther reduction, as recommended for these presentations, when they originally offer in these positions; as this attempt, if even successful, as regards the alteration of position, will necessarily destroy the child, by the excessive twist the neck must undergo in the operation. Should any of the accidents mentioned above complicate the labour, we must turn, and deliver by the feet; as directed for the third presentation, (691.) Or, if the waters have long been expended, or the uterus in a state of inertia, we must give the ergot, or apply the forceps. See Chapter on Forceps.

b. Chin departing too early from the Breast.

695. When treating of the mechanism of labours of the vertex, I remarked that the chin rested upon the breast of the child (627,) until the vertex or forehead were about to emerge from under the arch of the pubes; and that this position of the chin was essen-

tial to a natural, or easy labour: when the chin does not confine itself to the breast until the proper time for leaving it, the *longitudinal diameter* (87) of the child's head will offer to the small diameter of the lower strait, at the last period of labour; and thus present almost insuperable difficulties to delivery.

696. This case is known at the beginning of labour, by the anterior fontanelle being found in the centre of the pelvis; and, at the *last period*, by this part being at the bottom, or rather the lowest part of the child's head, and resting on the internal face of the perinæum; by one of the parietal protuberances offering to the arch of the pubes; and by the forehead being placed on one side of the pelvis, but the side to which it will offer will depend upon whether it was a first or fifth, or a second or fourth presentation, that was disturbed. If either of the two first, the forehead will be to the right side; if either of the two latter, it will be to the left.

697. Various causes have been assigned for the production of this very untoward situation of the head: Levret supposed it was owing to the shoulders being arrested at the superior strait, in consequence of the oblique situation of the child's body; while Baudelocque contends it arises from the direction of the expulsive forces of the uterus, and the manner in which they act upon the child's head; and this opinion appears to be well-founded.

698. The indication in this situation of the head is to restore the chin to the breast; this may be effected at two different periods of the labour: first, where the head has not descended entirely into the lower straight; and secondly, where it occupies the lower strait. As regards both inconvenience and certainty, the first situation of the head is preferable to operate upon; and, where practicable, should be chosen. But, to act with success, it is necessary that the os uteri should be well dilated, the membranes ruptured, and the pains sufficiently brisk. The mode of acting in this case is very simple; first, rectify the obliquity of the uterus by placing the woman upon the side opposite to the deviation, if either the right or the left lateral obliquity prevail; or upon the back, if the anterior; secondly, in the absence of pain push up the forehead, and maintain it in that position by making a fulcrum of the points of two or three fingers; when a pain comes on, maintain the resistance, by supporting the forehead with the fingers, until the vertex is found to descend, and the forehead to rise in the pelvis; when this is done, the de-

livery of the head may be trusted to nature. I believe it will not always be necessary to introduce the whole hand, in the first condition of the head, though perhaps absolutely necessary in the second.

699. Baudelocque recommends acting upon the forehead in the time of pain; I am aware it is rarely safe to differ from this high authority; yet I am equally convinced, it is occasionally proper to do so—and the case we are considering is one in point; first, because, did we act in time of pain, we should be under the necessity of overcoming its force before we could raise the forehead; this, of course, would be a work of supererogation; secondly, by acting in the absence of pain, we can, by a very small force, carry the forehead as high as we wish, and can maintain it in the position we desire it to take, by an exertion scarcely greater, than would be sufficient to raise a weight equal to that of the child's head; thirdly, the vertex will descend as a matter of course, if the forehead be prevented from doing so; fourthly, by acting during pain we are obliged to carry the forehead in direct opposition to the action of the uterine forces, which, when the uterus firmly embraces the head, are so entirely in the direction in which the forehead would descend, that we should only raise the forehead, without giving any opportunity for the vertex to fall into the pelvis.

700. In the second situation of the head, we are to be governed by the same principles, but they are more difficult to be put in execution; in this case, it is essential to success, that we raise the forehead in the absence of pain; and particularly, if the head have escaped the orifice of the uterus; when this is the case, it requires the introduction of the hand to raise the whole head: this should always be done, first, that we may be certain of keeping the forehead sufficiently high to permit the vertex to descend. After we have raised the head sufficiently towards the superior strait, we must place the extremities of the fingers against the posterior edge of the frontal bone, and make them serve as fulcra, as in the first instance, (698.) In doing this, we should carefully avoid pressure upon the anterior fontanelle itself. When the position is rectified, we must withdraw the hand, and let nature perform the rest.

701. I have dwelt upon this case, because it is one of great consequence to both mother and child—for if it be improperly managed, the child will too often fall a sacrifice to the method employed, and the mother will incur the risk which always at-

tends embryulcia. For it is a case in which the forceps would fail to relieve, since the head cannot be made to leave the pelvis in the direction it has descended to the lower strait; for the longitudinal diameter will be found parallel to the small diameter of this strait. Turning will be rarely possible, were it resolved upon; since in the second situation, the person who has charge of the case, and who must be supposed ignorant of the principles which should govern it,* will permit a great deal of time to pass, after the escape of the waters, under the hope that every pain will deliver the head, because of its nearness to the opening of the pelvis; he will at this time most probably find the head free from the mouth of the uterus, in which case turning must ever be forbidden, or if it have not, the uterus will be so firmly contracted upon the body of the child, as to render this operation impracticable; embryulcia is then the only resource of such a practitioner.

702. I will endeavour to illustrate this subject, by the relation of a case. Mrs. —— was under the care of a young practitioner of midwifery, with her fifth child. Her labours were ordinarily rapid, and her health and constitution excellent. She was attacked early in the morning, in the usual manner of her labours; and her accoucheur gave her a promise of speedy relief; her pains were strong and frequent; the uterus was well dilated; and the membranes burst soon after his arrival. Every expectation was entertained that the patient would soon be delivered; the head of the child had descended to the inferior strait; but after a short period, the head was found not to advance. Still supposing that nothing could prevent the delivery of a head so *near to the world*, he constantly gave encouragement to his patient, until her patience, and that of her friends, were exhausted—they now proposed a consultation. To this he did not absolutely object, but begged they would wait another hour before they should resolve, assuring them at the same time that it was impossible that the labour would last beyond that time—the hour passed away without this hope being realized, and the consultation was again urged, to which he reluctantly consented, from a firm persuasion that it was unnecessary. I was now sent for, (six o'clock, P. M.) but

* The person who has charge of this case is supposed to be ignorant of its mechanism, because he proposes another remedy for its relief than the reduction of the forehead; or reprehensibly waits, in the hope that the powers of the uterus will effect the delivery.

I happened to be some miles in the country, and did not return until after eleven o'clock, and by the time I saw the patient seventeen hours had elapsed since the commencement of the labour, which, until now, had rarely occupied two.

703. The gentleman in attendance gave the very candid statement related above; with the additional declaration, that he was "at his wit's end." He declared he could not possibly conceive the reason of this very unusual delay, and begged I would examine the patient. This I did; and found the case to be, the too early departure of the chin from the breast, as represented in the second situation of this presentation. I gave my opinion to the doctor; and tried to explain the mode of remedying this malposition. He undertook the operation, under the persuasion he understood it; and I was anxious he should, as he was a particular friend of the family, and was just getting into obstetrical business. He, however, pretty quickly abandoned the side of his patient; and earnestly requested I would do what was necessary. I had the patient properly placed, and introduced my hand under the head of the child; and raised it up to a sufficient height, and then sustained the forehead until a pain came on: the first two pains did not bring down the vertex as I had hoped; owing to the very firm contraction of the uterus upon the body of the child; I now directed the head more towards the right sacro-iliac junction, and had the satisfaction, upon the accession of the third pain, to have the vertex descend properly—I withdrew my hand; and the head was delivered the next pain, to the great joy of the mother; the safety of the child; and the astonishment of the doctor.

704. This case was an important lesson to this gentleman; he called upon me next day, and begged me to represent the presentation upon the machine; this I did most cheerfully, to his great delight and satisfaction; he now thoroughly comprehended its mechanism. It may, however, happen, that after the reduction of the head, and before it has passed through the external parts, some sudden accident may complicate the labour, and oblige us to terminate the delivery immediately; in such case, the forceps must be used. It is also possible, that one of the enumerated accidents may complicate the labour before the head is reduced: should this be so, it would be best to turn; provided the circumstances we deem essential to its success be present; or unless we should be convinced there will be no important time lost, in at-

tempting the reduction. Should the reduction be undertaken, and it succeed, the labour may be finished by the forceps, if the natural powers are not promptly sufficient.

*c.—Cases in which the Face presents.**

705. The face may present at the superior strait in four different manners—the most common is where the forehead offers to the left, and the chin to the right side of the pelvis; 2dly, is the reverse of this; 3dly, the forehead answers to the symphysis of the pubis, and the chin to the sacrum; the fourth is the reverse. In face presentations the woman always finds a difficulty in delivering herself; and delivery can only take place, when the head is in this position, in a well formed pelvis. They may therefore be considered, without many exceptions, as essentially bad, or preternatural presentations. Some authors have considered them so exclusively such, as to recommend turning wherever the face offers.† I would not be considered as constantly recommending this practice; yet I am persuaded, that should the third or fourth of these presentations occur,‡ it would be the best practice; especially where we could have the choice of the time, and the conditions. Turning is always attended with more or less risk to the child, however favourable the situation of the uterus may be for the operation, or however dexterously it may be performed; I may say the same, however, of face presentation; especially in the two last; and, above all, should the pelvis be rather contracted or the head large; therefore, in such cases, there is only a choice of evils.

706. It will be perceived, by the reader who may be familiar with the divisions of this presentation by Baudelocque, that I have reversed his order. There is a propriety in this; as I hold it to be a good rule, to place first in the numerical arrangement, the most frequent of any given presentation—and I am persuaded, as far as I dare trust my own experience, that the first and second

* It seems but proper, that the face presentations should be included in the order of the vertex; since they are but instances of the vertex disturbed.

† Dr. Davis is the latest author that advocates indiscriminate turning, in face presentations. He directs, "When the face is discovered to present at the brim of the pelvis at an early period of a labour, whether before, or very soon after the escape of the liquor amnii, there can, in my opinion, be no doubt of the preferableness of turning, to all other modes of treatment."—*Elem. Oper. Mid.* p. 245.

‡ Madame Boivin declares that there was neither of these presentations in 20,517 cases.

of my arrangements are vastly the most common, if not the only varieties of face presentations, as seen above. Madame Boivin declares, that neither occurred in more than twenty thousand cases. Nay, I may go farther, and declare, I have hitherto not met with either the third or fourth; (the first and second of Baudelocque,) and, indeed, some doubt may be entertained whether they have ever occurred. Baudelocque does not appear to speak from his own observation on this subject: or he would not have proposed the employment of the vectis, for the reduction of the vertex, in such cases—a mode of acting, I believe, that can never succeed; indeed, the vectis cannot be made to reduce the vertex, even upon the machine; as I have frequently demonstrated to my pupils.

707. The face may readily be distinguished from any other part, by the eyes, the nose, the mouth, and the chin; and its particular situation may be determined by this last feature, and the nose. The indication in these labours, if it is determined to interfere with them, is to bring down the vertex, and place the chin upon the breast. Baudelocque* says, this is effected by operating upon the vertex, rather than pushing up the chin—so far as my experience will justify differing from him, I should declare that pushing up the whole head before we attempt to bring down the vertex, though the head may still be at the superior strait, is essential to success. And farther, that we should always press the ball of the thumb against the highest part of the forehead, and urge it upwards, at the moment that we are endeavouring to make the vertex descend.

708. When these labours are terminated by the natural agents of delivery, they are always very tedious and painful; the child's face comes out much swoln and frequently livid; the eyes tumid, and the child itself is often born in a state of asphyxia. "The head," says Madame Boivin, "being turned backwards, offers a much larger volume than when the occiput presents. The bones of the face will not suffer themselves to be reduced in volume, like those of the vault of the cranium; consequently, the head engages with more difficulty; and if it be a first child the labour becomes long and fatiguing. The repeated contractions of the uterus, by augmenting the extension of the head, causes a dragging of the spinal marrow, compression, and to the engorgement of the vessels of the neck and head; the child is thus exposed to death from apoplexy: yet these cases are less fatal than we should at first sight imagine; for, of seventy-four cases of face

* System, par. 1337.

presentation, fifty-eight were born naturally; of these, forty-one were born without assistance, and seventeen after the occiput was made to correspond with the axis of the strait; fourteen required turning, and two were delivered by the forceps: these last two labours were complicated by convulsions."

709. The proper moment for acting, either as regards the condition of the uterus, or the situation of the head, can rarely be seized, in the case under consideration; for before the membranes are ruptured, they cannot be easily distinguished; and after they are, the mouth of the uterus is not always sufficiently relaxed to act with facility or advantage; and by the time it does dilate, the waters may have been so long drained off as to render the attempt fruitless.

710. In the first and second presentations,* we must have the concurrence of the following circumstances, before we attempt the reduction of the head: first, the uterus must be sufficiently open to permit the hand to pass, with little or no difficulty; secondly, the head must not have entirely passed the superior strait; thirdly, the waters must have been recently expended. If these advantages combine, after having the woman properly placed, a hand must be passed into the uterus: and the choice of the hand is a matter of the first consequence to the success of the operation: the governing rule is simple, and easily remembered; namely, the hand which is to the side on which the vertex and forehead are placed; that is, in the first, the right hand must be used; because, when before the patient, the right hand offers to the left side of her, or the pelvis; if the second be the presentation, the left hand must be employed, for a like reason.

711. In the first presentation of the face, we pass the right hand into the uterus in such a manner as shall put the back of the fingers to the posterior part of the pelvis, or before the left sacro-iliac symphysis, and place them on the side of the head, while the thumb is pressed against the opposite side; the head is then to be firmly grasped, and raised to the entrance of the superior strait. When the head is thus poised, the extremities of the fingers are to be carried over the vertex, while the thumb is moved to the centre of the upper part of the forehead; the fingers are then made to draw the vertex downward, while the thumb tends by its pressure to carry the face upward, thus executing a com-

* Of the first and second presentations, the third and fourth of Baudelocque, there were seventy-one in 20,517: of the first, forty-two; of the second, twenty-nine.

pound action upon the head. All this, it should be remembered, must be executed in the absence of pain: if we find, when pain comes on, that the vertex moves sufficiently downwards, and the face upwards, to give assurance it will now descend, we may withdraw the hand, and trust the rest to the action of the uterus. But if, on the contrary, upon the accession of the pain, we find the face still has a tendency downwards, we may be certain that the reduction is incomplete; and we must again and again attempt it, in the absence of pain, if it be necessary—for, under the circumstances I have stated, we are pretty sure of success under a well-directed management.*

712. In the second presentation, we employ the left hand, under the conditions I have stated for the first: and act in every respect as directed for that presentation.

713. Should, however, the above stated conditions of the uterus not be present at the proper time, or should the head have descended through, (or nearly through,) the superior strait, we cannot hope to succeed by any attempt made with the hand to reduce the vertex; the choice of remedy will then lie between turning, and the vectis. We should prefer turning, when the waters have not been too long drained off; when the pains are not either very frequent or severe; and while the head is still enveloped in the uterus.

714. The vectis may be tried under the contrary condition of things, (710) by passing it up the side of the pelvis, until it pass over the vertex—when it is placed, we must endeavour to raise up the face with the other hand, and prevent the vertex rising at the same time, by a counteracting force exerted by the vectis: this should be performed in the absence of pain, and continued until the face is found to ascend, and the vertex descend. If these manœuvres succeed in getting the vertex down, we may commit the rest to nature. It may, however, agreeably to my own experience, be practicable to turn, after the vectis has failed.†

* Whenever the waters have been evacuated some time, the operation here described will be embarrassed, by the uterus narrowing itself at that portion of itself, which corresponds to the neck of the child; and will thus prevent the reduction of the head. This obstacle must not be attempted to be overcome by force—it must be submitted to by letting the head advance with the face foremost.

† Dr. Davis proposes, for the reduction of the vertex, in face presentations, a kind of vectis, armed with teeth. The objections to such an instrument he has urged himself; namely, the wound inflicted on the scalp of the child, &c.; and they are every way sufficient to prohibit its use. The common vectis, as I have

715. In the third and fourth species of face presentations, I am persuaded it would be losing important time to depend upon any other mode of operating than turning; provided, 1st, the uterus be sufficiently dilated; 2d. the waters but recently drained off; and 3d. the head still easily moveable, at the superior strait. Should these important conditions be absent, it would be perhaps best, (but this is purely speculative,) to employ the hand in such manner, as will guide the forehead to the side of the pelvis; or, in other words, convert it into a first or second presentation of my division of the face, and then attempt the reduction of the vertex by the vectis, or deliver by the forceps, if the pains are not sufficiently active; and here the ergot should be tried.

d. Presentations of the Head, accompanied with the Hand.

716. The head may present perfectly well as regards its own position, yet may be accompanied by the hand—the presence of the hand can sometimes be detected, before the membranes have given way; and when it is found in this situation, it is almost sure to advance with the head. If the case be under management at this moment, the presence of the hand can rarely create any embarrassment to the well-instructed accoucheur; he knows, that by proper management, it may be easily prevented from descending. When the hand accompanies the head, it should be prevented from descending with it—this, for the most part, is readily effected by placing the point of the forefinger between the fingers of the child, and preventing its farther descent, by supporting it during a pain; and at the same time, directing the hand towards the face. When this is properly conducted, the head gets under the hand, and makes it retire within the cavity of the uterus.

717. When this case is neglected, and the hand permitted to descend, it may create great inconveniences, especially in a narrow pelvis: 1st, by obliging the head to turn away from the axis of the superior strait, and making the shoulder present itself in its stead; 2d. by accompanying the head in its descent, and preventing the latter from making the proper turns, that it may escape from the pelvis.

718. The first of these difficulties will be considered under the head of "shoulder presentations," which see; and the other will require the aid of the forceps—it occasionally happens, that this

observed, when properly managed, in proper cases, will succeed, as I have experienced.

situation of the hand and arm creates considerable embarrassment from the fixed situation it gives to the head, as well as the strong and perhaps dangerous compression which the arm suffers; also, from the absolute necessity there is to depart from one of the cardinal rules for the application of the forceps, (783,) by placing them upon the vertex and forehead; as the following case will show. I was called upon by Dr. Brown to visit a patient, who had been long in labour under the care of a midwife, in consequence of the arm being included between the symphysis pubis and the head; the labour had been stationary several hours, as the head could not descend, though she had had frequent and severe pains, but which were becoming more and more feeble, notwithstanding every possible exertion of the poor woman herself —the arm was very much swollen, the scalp pushed down, while the head was completely transverse, as regarded the pelvis—the head, in consequence of the long absence of the waters, could not be pushed up, therefore turning was impracticable. After having the woman properly placed, I applied the forceps so as to embrace the vertex and forehead—a moderate force was sufficient to bring the head through the superior strait; this gave so much freedom to the arm, as to induce me to withdraw the instruments, and apply them comme il faut: the head was soon disengaged; and the mother and child did well.

719. It must be recollected, that the head is not the only part which the hand may accompany; it may present with the breech, the knees, or the feet: when this happens, it rarely creates any obstacle to delivery per se, though it may embarrass, if improperly acted upon, either accidentally or designedly, by an ignorant practitioner. Whenever the hand is perceived at the superior strait, it should be treated as above directed, (716,) though the attempt to retain it within the uterus may sometimes be unavailing, as it frequently denotes the presence of the shoulder at the upper strait.

Sect. XI.—11. *Exhaustion.*

720. The capacity to support the toil of labour will vary in almost every individual, either from original stamina, or the severity of the process itself. Hence, the most robust woman, as well as the most delicate, may become exhausted from the force or the long continuance of labour—the exhaustion now alluded to, is not the mere loss of strength in the muscular system, but a state of inertia of the uterus itself. Both these conditions may

combine, or they may exist separately, and independently; when combined, they are almost always accompanied with syncope; of this, I have already treated; when they exist separately, our conduct must be regulated by the system which suffers. Should there be a mere loss of muscular strength, and the uterus preserve its powers, it will offer no indication as regards delivery; but should the powers of the uterus be upon the wane, or be entirely suspended, though the woman possess great muscular vigour, it should warn us not to confide too long in this general appearance of strength, lest the uterus itself may be subjected to casualties independently of temporary loss of vigour.

721. This situation of the uterus may arise from very different causes, and require very different modes of treatment; first, overdistention from an excess of the liquor amnii; when this is the case, we find the pains returning at rather uncertain intervals, and confined to the uterine globe; very little of that bearing down sensation, which accompanies the healthy protrusive effort; the membranous bag with the waters is not very tense during pain; and the patient experiences a general restlessness and anxiety, when pain has abated, and can lie only on her back. In this case the loss of power is only relative, and though it may have all the appearance of *absolute* weakness, and is frequently mistaken for it, yet it is not truly so; for stimulants but increase the mischief, by exciting the arterial system, and goading the uterine fibres to more frequent, but to more feeble efforts. The remedy in this case, is to remove the cause; namely, the liquor amnii, as the following case will show.

1796, May, 16: Mrs. ——, in labour with her first child, and of good constitution, was taken with feeble, but pretty frequent pains in the night, which she bore without disturbing her family until the morning, at which time she sent for her midwife. As the pains were feeble, and transitory at the time of the arrival of the midwife, she told her, her labour was yet too weak to bring her child, and she would call again in the course of an hour—she did so, and found things pretty much in statu quo; she again took her leave, and did not return until towards the evening; and then it was in consequence of a summons from the patient, who had become very uneasy and restless; enjoying no interval of comfort, though the pains had become slower. She now examined the patient, who had at this time what is called a plentiful show, and the os uteri was relaxed; but as the pains made very little impression upon the membranes, she concluded this could only arise

from *weakness;* she, accordingly, prescribed strong cinnamon tea, and a stimulating injection. This injection afforded a temporary relief by discharging a large quantity of hardened feces; but the pains were still weak, though recurring frequently. The patient became feverish, with much headach and thirst; the midwife and the friends of the patient became alarmed, and I was requested to visit her.

722. On my arrival, I received the above account—I waited a few minutes to observe the nature of the pains, as well as to ascertain other particulars. I examined the uterine globe during pain, by placing my hand upon it, and found it to harden but little; the uterus was enormously distended; so much so, as to have the fundus at the scrobiculus cordis: the pulse was quick and full; there was also considerable headach. I examined the state of the uterus per vaginam, and found, as the midwife had declared, a relaxed os uteri; or at least a yielding one, and very little pressure upon the membranes during a pain. It immediately occurred to me, that this appearance of uterine exhaustion was only relative; and during the next pain, I ruptured the membranes; this gave issue to a prodigious quantity of water; frictions were instituted upon the abdomen; in the course of half an hour, the pains began to increase, and in half an hour more, the patient was safely delivered, after a labour of eighteen hours, which might have been terminated by proper management in six.

723. This appearance of exhaustion in the uterus may also arise from an engorgement of this organ; it will, like the one just mentioned, simulate weakness, or want of power, as if there was positive inertia present—this condition may be known by the labour having come on kindly, but the uterine powers are found to diminish gradually; the os uteri disposed to dilate; but the presenting part is not protruded during pain, and the pain felt over the whole abdomen. The woman feels a sense of suffocation, or sinking; the pulse is hard, full, or depressed; and the pains irregular, both in force and frequency. This case is only to be relieved by blood-letting; the following case, selected from a number of the kind, will illustrate this situation.

1792, August 17, Mrs. ——, aged twenty-eight years, in labour with her first child: pains commenced regularly and pretty severely, and continued to be so for some time; they then became desultory in frequency, and less in force—the midwife, before I saw her, gave her some stimulating drinks, which increased certain unpleasant feelings; as a sense of suffocation, heat and pain

over the whole of the abdomen, sickness at stomach, &c., without augmenting the force or frequency of the pains. When I saw her, she was labouring under all the distressing symptoms just mentioned, together with a distressed pulse, frequent sighing, great uneasiness, and very apprehensive that her situation was dangerous; the mouth of the uterus was but little dilated, though quite unresisting, when an attempt was made to stretch it; its edges were thickened, but not tense; during pain, very little impression was made upon the child, and the mouth of the uterus rather contracted than opened. As much oppression about the præcordia attended, together with great heat in the abdomen, she was ordered to lose blood. About twenty ounces were taken before the oppression and heat were much diminished; but as these were relieved, but not removed, and as the pulse acquired vigour by the operation, I was induced to continue the bleeding until these unpleasant symptoms should subside; this happened upon the loss of about ten or twelve ounces more of blood. The pains now increased so much, that in about twenty minutes she was safely delivered.

724. There is another variety of this exhausted, or rather passive state of the uterus, which, if not well understood, may mislead—it is where labour commences with the usual precursors, such as the subsiding of the abdominal tumour; the secretion of mucus; forcing, or bearing down pains; and every thing giving promise of a speedy delivery. After these favourable appearances have continued a longer or shorter time, the pains cease altogether, or nearly so, without evident cause; and the whole labour seems to be at an entire stand. The pulse, in this case, is very little disturbed; but a train of nervous symptoms supervenes; such as palpitation of the heart; great oppression about the præcordia, with a sense of suffocation, if the patient attempt to lie down; and a disposition to syncope, if she rise up. The os uteri is well dilated; and the membranes remain entire.

725. This case excites much alarm; and is not unfrequently treated by stimulating medicines, or liquors, by ignorant practitioners, to the injury of the patient. This condition of the uterus is peculiar, and requires the administration of such remedies as may have a specific action upon its fibres; such as the secale cornutum; and is one of the happiest cases to illustrate its powers, as the following case proves.

1824, March 14th, I was called in haste to Mrs. ——, whom

I found perfectly free from pain, on my arrival. I was, however, informed that her pains had been frequent, and strong, previously to her sending for me; indeed so much so, that they feared I should not arrive in time. The pain she experienced previously to my coming, particularly great while lying on the bed: to relieve which she arose, and from that moment she was easy. She complained of a most distressing pain at the lower part of the sternum, with a sense of suffocation, and palpitation of the heart. I waited half an hour for the return of uterine contraction, but it did not take place. She was requested to lie down, in hope it would produce their renewal, as they had been severe while in a horizontal posture—she complied; upon examination, the os uteri was found well dilated, and the head occupying the lower strait; and the membranes entire. I ruptured the membranes and waited another half hour, but pain not returning, a scruple of the ergot was given; in fifteen minutes the pains were briskly renewed, and she was soon after safely delivered of a healthy child.

726. Exhaustion, however, may be positive; and may be occasioned by severe, and long continued exertion. In this case, the uterus ceases to contract, or contracts so feebly as not to advance the labour. When this is so, the general strength of the patient fails also—she becomes listless, and indisposed to exertion; she almost always sleeps between the slight pains, if they exist, or if they do not, she continues in an uneasy and disturbed slumber, until she may be aroused by the anxiety of her friends, or by officiousness in offering her something to "refresh her." The skin is almost always damp, or even sweating; the pulse frequent and small; the countenance pale and haggard; and the stomach oftentimes much disturbed.

727. The original cause of inertia of the uterus is very frequently owing to the rigidity of the os uteri, or external parts retarding the labour, until the uterine powers are expended, in the attempt to overcome it—when this happens, the relaxation so much desired takes place, from both general and particular weakness; but the woman derives no advantage from the kindly opening of the os uteri, or long-looked-for yielding of the external parts, as she is now deprived of that energy, so necessary to profit by these changes. It is in vain to give stimulants, or waste important time in waiting for the restoration of uterine power—we should, however, try the ergot; and, should this not

renew the uterine forces, we must turn, provided the uterus is sufficiently relaxed, the membranes entire, or the waters but recently expended, and the head of the child still enveloped in the uterus. If the head has left the uterus, or occupies the lower strait, and is not easily moveable in the pelvis, we must use the forceps.

728. I have been obliged, under the head of "Exhaustion," to give examples that were not in strict conformity with the subject in question; namely, where "a natural labour was complicated, and required manual assistance." But they are of an important character, and cannot, perhaps, be classed better under any other head. Hitherto, so far at least as I know, every species of inertia has been treated in the same manner; the distinction I have made, I think, deserves attention.

Sect. XII.—12. *Hemorrhage from other Parts than the Uterus.*

729. It sometimes happens, though rarely, that a bleeding of an exhausting kind, as from the stomach, bowels, or lungs, may oblige us to finish a labour artificially, that might have terminated naturally, without such an accident. When a bleeding accompanies labour, which, if too long continued, would exhaust the patient, we should inquire, first, what agency the labour has, in either its production or its continuance; and, secondly, how far immediate delivery would contribute to arrest it. If we are satisfied upon these points, and conclude, that the only chance for the woman is delivery, we should proceed to it, without farther loss of time. We should turn, when the uterus is dilated or dilatable; when the membranes are entire, or they have but lately given way—use forceps when the uterus is strongly contracting on the body of the child, and the waters long expended; or when the head is low in the pelvis.

CHAPTER XVIII.

RULES FOR CONDUCTING A PRETERNATURAL LABOUR.

730. Under this head, I shall only consider the rules proper for conducting a preternatural labour, where the hand alone is sufficient to terminate it, or will enable the woman to deliver herself. As preternatural presentations, strictly so called, have nothing in them before labour to declare their nature, we cannot possibly rely upon any symptoms to point them out; we must, therefore, depend solely upon an examination per vaginam, to satisfy ourselves of their presence: but as we cannot always determine with sufficient certainty the exact position of the child, until the membranes have given way, it is necessary, as a general rule, to wait until this take place, before we can decide on the species of the presentation.

731. In the accidental preternatural labour, (651, et seq.) we must determine upon the necessity of interference, according to the extent or severity of the accident which may complicate it; and not exclusively by the good or bad position of the child. We, therefore, in such cases, regulate our conduct almost exclusively, as regards delivery, by the condition of the os uteri—should it be unfavourable to operating from the smallness of its opening, or its rigidity, we must, for the time being, abandon the idea of entering it to turn, or to effect any other important change upon the child, as it would require a force that would be wholly incompatible with the safety of the woman, or the preservation of the child. In the mean time we temporize in the best manner the nature of the accident which complicates the case will permit, by prescribing the remedies the most proper for the moment; or adopting such means as may best suit the exigency; as bleeding, opium, injections, &c. (See chapter on the causes which may render a natural labour preternatural, p. 239.) But on the contrary, if the os uteri offer no difficulty, we have only to consider the best moment to act, when we have the choice in our power. This choice must be governed by general, as well as particular rules: before, however, entering upon either of these, it will be necessary to point out the proper position of the woman, that both may be the better understood.

Sect. I.—*Position of the Woman for Turning, and the general Mode of Operating.*

732. When necessity obliges us to terminate a labour, either well or ill begun, the woman should be so placed as to give the least possible hinderance to the manœuvres of the accoucheur—the propriety of this direction is agreed upon by all; but there exists a diversity of opinion what that position is. Some recommend the side; others the knees, and others the back. The latter, has always appeared to me as the best that can be adopted, for either convenience or advantage; I, therefore, constantly direct the woman to be placed upon the back, so as to give the greatest possible freedom for action. This position should be made as comfortable as the nature of things will permit; I, therefore, order the bed to be made in the following manner:

733. 1st. A mattress, if at hand, must be placed so as to reach to the very edge of the bedstead, that it may prevent the woman from being injured by its hardness; 2d. The mattress must be covered with a folded blanket, or sheet, that it may receive no injury from the discharges; 3d. Two chairs should be placed at a proper distance apart, to support the feet of the patient; 4th. The feet and knees are to be steadied by an attendant sitting on each chair; 5th. An old rug, blanket, piece of carpet, or oil-cloth, should be spread upon the floor, immediately below where the patient will be placed, to secure the floor from being soiled by the discharges; 6th. A pot or basin should be at hand, that it may be placed upon the floor below the patient, to receive whatever may drain from her, after she is fixed upon the bed for delivery; 7th. The patient must be laid upon the mattress horizontally, with her lower extremities over the edge of the bed; so as to leave the perinæum and coccyx free of the margin of the bedstead; 8th. She should be covered, to be protected against cold, as well as to comply with the rules of decency—so much regards the patient. On the part of the operator, the following rules are to be observed; 1st. All parade should be especially avoided, as well as all formidable preparations; the idea should never be given that the operation in question is one of difficulty or hazard; 2d. If within command, he should put on, after he has taken off his coat, a loose bed-gown with large sleeves; these he must slip up, when on the point of operating; this will prevent the exposure of the bare arms, which are always unsightly both to the patient and the

by-standers; especially after operating; 4th. A folded sheet should be at hand, that it may be thrown over the lap of the operator if he sit; but I have ever found it more convenient to kneel upon a pillow; which position I would recommend; especially if the bedstead be low; 5th. The hand should be lubricated with lard or fresh butter, as well as the vagina, and external parts of the woman, before an attempt be made to pass the hand; 6th. The time of pain should be chosen to introduce the hand; which is to be made into a conical form, that it may enter, and dilate the vagina the more certainly and gradually; 7th. After the hand is in the vagina, the absence of pain should be chosen, to pass it into the uterus; 8th. The hand should be passed in the most gentle and gradual manner, that as little pain may be given as circumstances will permit, as well as to not provoke untimely contractions of the uterus; 9th. If the hand become much cramped or fatigued, it must be withdrawn, that it may recover; 10th. The operator will be much aided, while searching for the feet, and in bringing them down, by making the other hand fix the uterus, by a gentle, yet sufficiently firm pressure, from time to time, externally upon its fundus; thus giving advantages to the hand within, that could not be procured without it; 11th. A proper selection of the hand that is to enter the uterus must be made; either, not being equally proper in all cases; 12th. The hand should be passed immediately to that part of the uterus, where the feet are expected to be; and this must be determined by the presentation, or situation of the child.

734. When the operator has gained the feet, he should, 1st. Grasp them firmly with the hand, but should always, in doing this, place a finger between them,* to prevent injury, from compression; 2dly. When practicable, both feet should be acted upon at the same time; 3dly. Though sometimes practicable, nay easy occasionally, to deliver by one foot, it should never be done but from downright necessity; and this can occur but rarely;* 4thly. In bringing down the feet, they should be conducted in such a manner as will make the toes constantly look towards the abdomen of the child; or, in other words, make them pass as it were over the face; this rule is most important, and should never be

* In order that the rule, 4th, (par. 734,) may be rigidly observed, it will be proper to observe, that in complying with rule 2d, it is necessary sometimes to draw a little stronger upon one of the legs of the child than the other; the cases where this is important, will be readily distinguished by the operator during the turning.

neglected, if we have any regard for the safety of either mother or child; for if infringed, the mother may suffer a laceration of the uterus, and the child certain death, by an injury done to the spinal marrow; 5thly. Should it only be practicable to bring one foot to the entrance of the vagina, let it be secured by a fillet, while search is made for the other; 6thly. No attempt should be made to turn the child during a pain, lest the uterus suffer laceration; 7thly. But after the feet are without, every advantage should be taken of pain, if it exist, to facilitate the delivery. 8thly. The whole act of turning should be considered as one of necessity; rather than of choice; therefore, where it is proper to attempt it, it is, I believe, always proper to finish it, and not to trust the farther delivery of the child to the powers of nature, as some have recommended; 9thly. The operation of turning should be performed slowly, and steadily; especially, if it be attempted in the uncontracted uterus, or immediately after the evacuation of the waters;* 10thly. Difficulty is frequently experienced in bringing down the breech, when the feet are in the vagina, owing to the head sinking in part, into the superior strait; when this is the case; the head should be raised, while the feet are drawn downward; this is easily managed, by applying the thumb against the forehead of the child, and forcing it upward, while the fingers which are grasping the feet are made to draw them downwards;† 11thly. When but one foot can be seized at a time, care should be taken that it belong to the side which the hand has passed over; otherwise, a severe twist will be given to the body of the child, and most probably defeat the attempt to bring it down; 12thly. The feet should be brought through the external parts in such manner, as will place the toes towards the anus of the mother; and when the legs are delivered as far as the knees, they should be wrapped in a piece of dry cloth, and the thighs taken hold of with the same, and gently drawn downwards until the nates are entirely without; the hips should then be taken hold of, and the abdomen drawn through, until the umbilicus appears; 13th. When the umbilicus is exposed, a loop of the cord should be drawn without the vulva, that it may not be

* This rule should never be violated, as the too sudden emptying of the uterus may occasion accidents, of a serious kind; as, inversion of this organ, or severe hemorrhage.

† Baudelocque, par. 1802, declares this double action to be impossible, at one and the same time; but I know the contrary, from frequent experience; and have very often demonstrated it to my pupils upon the machine.

injured by being too severely put upon the stretch; to do this in the best manner, a couple of fingers should be slid along the cord two or three inches, and the part of the cord above the fingers should be gently pulled by the upper finger, while the portion of cord next to the child should be prevented from being stretched, by pressing it and retaining it, or rather pulling it towards the umbilicus by the thumb, and lower finger; while the upper finger draws down a portion of it, if it be sufficiently loose, by stretching itself along the upper part of the cord: 14th. If the cord do not descend, or cannot be made to do so by gentle means; and if there be reason to fear it will suffer, if farther stretched, it is thought best to cut the cord; Baudelocque says, without applying a ligature, but I should think it best to apply one; 15th. When the child is freed from the restraint occasioned by the cord, or if none exist, and it is delivered beyond the umbilicus, it should be made to pass through the arch of the pubes with its spine looking towards, or pressing against, either the right or left leg of the the pubes, that the head may enter the superior strait obliquely; this must be done by a little turn of the body, if it does not place itself in this situation as we continue our tractions downward. Little difficulty is experienced in delivering the child thus far; but its progress is interrupted by the axillæ appearing at the vulva; 16th. When the axillæ appear at the os externum, the one next to the sacrum should be first delivered by passing a finger or two upon the point of the shoulder, and pressing it pretty firmly downward, and then tracing the arm to the elbow; this we endeavour to bend, by pressing it on its internal surface exactly opposite the joint, and at the same time, urging it downwards, and forward, toward the face of the child, where it will almost always disengage itself, and fall into the cavity of the vagina; from whence it is easily delivered by hooking it forward with the point of the finger—if the child be large, or the pelvis small, it is best to raise up the body of the child towards the abdomen of the mother, before we attempt the delivery of the first arm; if the pelvis be large, or the child small, this is not necessary; 17th. The second arm is now to be delivered; this is almost always more difficult than the first, and sometimes extremely so, if the head and arm are both engaged in the small diameter of the superior strait; or when the arm has passed behind the neck of the child; this difficulty, however, is overcome by a very simple process, which I do not remember to have seen recommended by any one for this purpose; but which has always, in my

hands, been successful—this is, when the head and arm are thus situated, to turn the shoulder of that arm, to that side of the pelvis, to which the face of the child looks, and it will instantly become disengaged; it must then be brought down as directed for the other; 18th. If the head should be too high to deliver the shoulders as directed, it should be made to descend lower in the pelvis by pulling at the body, provided this can be done safely to the child; if this cannot be done, let the arms be brought down first; 19th. Should the head be so low as to press the arms strongly against the margin of the inferior strait, it must be pushed backwards and upwards, that the arms may have more freedom. When the arms are delivered, there remains the head to be disengaged; for the liberation of which, we must attend to the following rules:

735. 1st. Before any attempt be made to extract the head, its situation should be determined by a careful examination of its position; if it be at the superior strait, the face must be at one side, that the great diameter of the superior strait, and that of the head, may correspond: if it be not in this position, let it be so placed; by pressing the side of the face with a couple of fingers—when thus adjusted, it will readily descend by a small force applied to the body, but this must be in the direction of the axis of the superior strait; 2d. If the head be at the inferior strait, the face should be in the hollow of the sacrum; if not thus situated, we must rectify the bad position by pressing against the cheek, and carrying the face to that place; or rather, so that the face shall lie upon the perinæum; when thus placed, the great diameter of the head, and that of the lower strait, will correspond; 3d. The body of the child must now be carefully supported, by passing the arm beneath its body, and allowing the legs to straddle the arm; while the fore, and middle fingers, are passed one on each side of the neck, which will not only give support, but permit a firm hold when tractive force is required, to deliver the head; 4th. When the head is in this situation, it is almost always without the uterus; we cannot expect, therefore, any aid at this time from the contractions of this organ—the woman must now be solicited to employ her voluntary powers of bearing down, that too much force need not be employed, by acting on the body of the child; 5th. To co-operate with the exertions of the mother, we must draw the body of the child nearly upward, while we press with two or three fingers upon the occipital bone, so as to carry it downward, and disengage it

from behind the pubes; this last direction I consider as one of great importance—by attending to it I have secured a safety to the child, which would have been lost without it; 6th. Advantage is sometimes gained by depressing the chin, but never by acting upon it—the object in depressing the chin is to prevent its hitching in the folds of the vagina, and thus creating delay and difficulty.

736. It will be readily seen, that in deliveries of this kind, the child must run a constant risk, whenever there is the least delay to the delivery of the head: this danger arises from, 1st. The compression of the umbilical cord; 2d. The compression of the head and chest; and 3d. From the severe extension, the neck doing mischief to the spinal marrow. With a view to remove these latter dangers as much as possible, we should never attempt to deliver the body of the child rapidly or by main force; the whole of this difficult, but highly important process, should be conducted coolly, and deliberately; making all our endeavours cooperate with those of the uterus—pains should always be waited for, though they may be far apart; as much of the mischief which constantly threatens the child, is removed by their forwarding it, instead of its being the effects of force applied to its body. Should there be no pains, we are then obliged to act without them; but we should endeavour to imitate them, by permitting intervals of rest, and soliciting the efforts of the woman.

737. In the hurry and confusion consequent upon a delivery of this kind, a young practitioner is apt to forget the useful caution of not turning the body of the child upon the head, more than the spinal marrow will bear; but this important direction must not be lost sight of, in attempts to deliver the head by acting upon the body—I once saw, in the hands of a midwife, two complete turns of the body at the expense of the neck; I need not mention the result of such ignorance.

CHAPTER XIX.

THE MODE OF OPERATING IN EACH PARTICULAR CASE OF HEAD PRESENTATION.

738. Having in the preceding pages pretty fully detailed the general modes of conducting the operation of turning, I shall now

consider it, and the other methods to be pursued, in each particular presentation of the head when rendered preternatural by some accident complicating the labour; or where the presentation itself renders interference proper and necessary.

Sect. I.—*First Presentation.*

739. I have already given the characters of the different presentations of the vertex, therefore I shall not repeat them. I must premise, that it is very often essential to the success of the operation of turning, that a proper choice be made of the hand. I would wish to impress this truth upon the recollection of the inexperienced practitioner; and as the rule is extremely simple, there is no excuse for its neglect. That hand should be employed, the palm of which will look towards the face of the child; therefore, in the presentation under consideration, it will be the left hand.

740. A necessity for turning existing, the woman is to be placed, as already directed for preternatural labours; (732, &c.) and the left hand, properly prepared, must be introduced into the vagina, with the thumb looking towards the symphysis pubis; the hand must be placed so as to grasp the head with the fingers on one side, and the thumb upon the other—it is then to be raised in the axis of the superior strait, and placed in the left iliac fossa, where it must be retained by the wrist and forearm, while the fingers are made to travel over the left side of the child, which will be towards the posterior part of the uterus, until they get possession of the feet—these are to be brought, as already directed, as far as the middle of the vagina; when thus far, it frequently happens that their farther progress is arrested by the breech not descending; and the breech is prevented from descending, by the head having slipped from the iliac fossa, where it had been placed in the commencement of the operation. When this is found to be the case, the head must be removed by the compound action of the hand already described; (734, 10th,) when this is done, the breech will pass into the superior cavity of the pelvis, without farther difficulty; and when the feet appear without the vulva, such direction should be given to the breech as will place the breast of the child towards the left sacro-iliac symphysis; or, in other words, obliquely as regards the superior strait; this is effected by acting for an instant only upon the foot that is immediately under the pubes, and finish the delivery as directed.

Sect. II.—*Second Presentation.*

741. In this presentation the right is the proper hand, for the reason already assigned, (739:) it must be passed up until the head is placed into the right iliac fossa, as before directed for the first presentation; the right side of the child must be passed over; the feet brought down, and the labour finished as above.

Sect. III.—*Third Presentation.*

742. I have already remarked, that this presentation may be bad in itself, and render a labour either difficult, or preternatural, where the measurement of the pelvis is rather below the healthy standard; or the head excessively large; but that it might offer no more difficulty than the first, or second, where there obtained a proper relation between the head and pelvis.

743. Either hand is eligible in this presentation, as will be readily perceived, by recalling to mind the rule upon this subject—should the circumstances accompanying the labour, (be they original, or accidental,) oblige us to have recourse to turning, we may employ that hand, of which we have the greatest command. Should nothing but the position of the head with a slight diminution of capacity in the antero-posterior diameter affect the labour, we may sometimes enable the woman to deliver herself, by two or three fingers applied to the side of the head, so as to carry the vertex towards one of the acetabula—to the right, if we use the right hand, and to the left, if we use the left —when thus placed, we may commit the termination of the labour to the natural efforts; provided, no other circumstance complicate the labour.

744. Should this mal-position of the head not be discovered in time; and the uterus be contracted firmly on the body of the child, the fingers, (as directed above,) will not be sufficient for the removal of the occiput from over the pubes; we must, in this case, introduce either hand so that the palm will look upwards in the pelvis, and then take hold of the head, as already directed it should be seized; raise it in the direction of the axis of the uterus, and when a little freed from the superior strait, turn the face to the side, contrary to the name of the hand employed; then trust to the powers of the woman for the rest, provided these appear sufficiently efficient.

745. When, from the nature of the case, we are obliged to turn, we carry up the head, and give it the turn just mentioned; and where practicable, make the shoulders take the same course; the hand will point out the side to which the face must be turned; then finish the delivery, as if we had interfered with a first or second presentation. If we cannot change the shoulders by acting immediately upon them, we may give the proper turn by pulling for a little while upon the right leg, if the face is turned to the left side, and upon the left, if turned to the right side.

Sect. IV.—*Fourth and Fifth Presentations.*

746. These presentations, in consequence of the forehead coming under the arch of the pubes, are always more painful and tedious, (cæteris paribus,) than where the vertex offers to this part; but in a well-formed pelvis, unless some accident complicate the labour, we are seldom or never obliged to turn for these positions alone. Should, however, any circumstance render it necessary, we may turn in these cases, with as much facility as if they were the first and second vertex presentations: and we conduct the process precisely in the same manner; that is, in the fourth, the rules for turning are exactly the same as has been already directed for the second presentation, and in the fifth it is conducted as if it were the first—it is important, in these cases, that the leg which offers under the pubes should be more acted upon than the other, that the breech may take a proper position in the superior strait.

Sect. V.—*Sixth Presentation.*

747. I believe it best in this presentation to turn, if the head and pelvis have but their ordinary relations; and most certainly so, if the latter is a little contracted, or the head of more than ordinary size; provided we are called early, and can have the advantage of the opening of the membranes; or if they have been but recently discharged. If the head be small it will come along without much difficulty; and if but very little smaller than the pelvis, advantages might be derived from turning the occiput from the projection of the sacrum, as recommended by Baudelocque, and as once practised by myself, (see 646;) but this pre-

sentation so rarely occurs, that almost all I can say upon the best mode of treating it, is derived from analogy and reasoning. After the head has passed the superior strait, it can offer no greater difficulties than the fourth or fifth presentation; but like these, it may require the application of the forceps; for, if the waters be long drained off, and the uterus strongly contracted on the child, turning would be extremely difficult, if not impracticable; as happened in the case I mentioned, (646,) having succeeded, by turning the occiput.

748. When turning is attempted in this case, either hand may be employed at the option of the operator; the head must be seized as directed for the third presentation, and converted into the fourth or fifth. Baudelocque recommends it being reduced to the first or second; I sincerely believe this to be impracticable; I am certain it cannot be done if the waters have been long evacuated; and if it have succeeded, it must be at the moment they have expended themselves, and while the head yet enjoyed freedom at the superior strait. The turning must be finished, as if the head originally presented in either of these positions.

749. Having spoken of the modes of terminating preternatural labours where the hand alone was sufficient, I shall now proceed to the consideration of the forceps as a means, where the hand is not capable of performing it, or where it is not proper to employ it—for this purpose, I shall commence with a general consideration of these instruments; and afterwards point out the modes of application, in each particular case; this will bring me to the third part of the work.

PART III.

WHERE IT IS NECESSARY TO USE INSTRUMENTS WHICH DO NOT NECESSARILY INJURE THE MOTHER OR CHILD.

CHAPTER XX.

OF THE FORCEPS.

750. I SHALL not unnecessarily consume time in tracing the history of these important, but too frequently abused instruments; nor point out the alterations which caprice, or the affectation of improvement, have imposed upon them.* I shall merely declare my preference for the long French, or the Baudelocque forceps. An experience of many years, I think, justifies this choice; the election is neither hastily nor heedlessly made; I think I have duly weighed the merits of both the long and the short forceps, and the preponderance is in favour of the long. In making this choice, I had no theory to support; and therefore, had no prejudices to overcome; my sole desire was to determine which of the two would best answer the ends for which they are designed—trials, often repeated, have led to the conclusion, that there is no situation of the head, which can be delivered by the short forceps, that cannot, with *at least* equal certainty and facility, be relieved by the long; but the converse of this does not obtain; for there are situations of the head, which cannot be relieved by the short forceps; but to which the long are every way competent; this, in my estimation, is conclusive. See Plate XIII.

751. I shall briefly state the objections, which experience has

* Dr. Blundell says, "I do not like to see an elegant pair of forceps. Let the instrument look like what it is, a formidable weapon. *Arte non vi* may be usefully engraved upon one blade, and *cave perineo* on the other." There is much good sense in this suggestion.

suggested, against the short forceps. For a number of years the short were the only forceps I employed: and I only abandoned them from a conviction of their inferiority to the long. First, they can only be employed with advantage, when the head occupies the lower strait. Secondly, when it is required to deliver from the superior strait, or above it, neither their length, nor their form, will permit their application; we are then obliged to use the long; but the converse of this never happens.* Thirdly, from the shape and shortness of their handles, they become very inconvenient to the operator; forbidding, from these causes, the application of a sufficient force, to overcome the resistance. Fourthly, their mode of union is such as to render them extremely inconvenient to the operator, and oftentimes very painful to the patient, by including, while locking, either a portion of the soft parts, or some of the capilli of the pudendum; thus creating a great deal of pain.

752. It is however insisted, that the last objection can always be removed, by carefully passing the finger around the lock; but this is a mistake—for it is in the act of locking that this inclusion takes place. Now, it is certain, that the locking of the instruments requires the use of both hands; consequently, we cannot pass a finger round the locking portion, so as to extricate the soft parts, or capilli, if included, or prevent them from insinuating themselves between the joint; as the hands, and of course, the fingers are otherwise employed at this moment. It is true, we may search for the included part, or parts, before we commence extracting; but to relieve the soft parts would require the separation of the blades to a certain extent, and this without any security that it will not happen again, when the handles are again pressed together; and the capilli can only be relieved with certainty, by breaking them, which would be painful, or by cutting them, which is not altogether decent.

753. In favour of the long, I may state, that no one of these objections attaches to them; they can be used in any position, or distance of the head within the pelvis; that the form and length

* Dr. Davis seems to entertain similar notions of the insufficiency of the short forceps in certain cases, and I shall avail myself of his observations on this point. He says, "What I wish at present to insist on, is the absolute unsuitableness of the instrument known in this country by the name of the short or common forceps, for the relief of cases of impaction, from disproportionate size of the fœtal head within the pelvis, on account of a general deficiency of space within its cavity." —*Elem. Oper. Med.* p. 141.

of their handles, gives great and decided advantage to the operator; rendering his exertions more effective, and much less fatiguing; their mode of union obviates the very serious objection urged against the short, (751;) for they lock without the vulva, even when the head is high; and remote from it, in lower positions—besides, they unite in themselves the forceps, the lever, and the blunt hook.

Sect. I.—*General Rules for the Use of the Forceps.*

754. We may divide the general rules for the use of forceps, into, *a.* Those which regard the position of the woman. *b.* Those which respect the uterus and soft parts. *c.* Those which refer to the application of the instruments, and their action on the child's head; and *d.* The mode of acting, after they are applied.

a.—Those which Regard the Position of the Woman.

755. Position is every way important to the successful application of the forceps; but as regards the particular situation of the woman, there is a diversity of opinion between the British and Continental practitioners—and, indeed, the same may be said of the different accoucheurs in our own country: this depends very much upon the school in which they have been educated, or the authority they are in the habit of following. The British practitioner almost invariably directs the patient to be placed upon her side, with her hips near the edge of the bed;"* while the Continental accoucheur has her placed upon her back.† It is, perhaps, not very difficult to explain the cause of this difference—the British practitioner never, or but very rarely since the days of the well-instructed and judicious Smellie, attempts to deliver the head from the superior strait; while many of the Continental accoucheurs do—in the first, the lateral position of the woman is, perhaps, as proper as any; but in the second, it would be impossible to deliver from the superior strait: now, as the position of the back enables the practitioner to deliver from any part of the pelvis, it should always, I think, be preferred; especially as the relative situations of the head and pelvis will be better understood by the young practitioner; for he will have

* Denman, &c. † See Baudelocque, &c.

the symphysis pubis as a mark, by which he can determine every other part of the pelvis; this he cannot so exactly do, when the patient is on her side.

756. Therefore, when practicable, I would recommend she should be placed upon her back, as directed for turning (733, &c.) both for convenience and safety. I say when practicable; for it is not always so; since, in cases of extreme exhaustion, or flooding, of convulsions, &c., we sometimes cannot move the patient to be thus placed; but we can always turn her upon her side; or if the head be very low, and the patient is on her back when interference is necessary, she may remain so; but when we can command position, I repeat, I prefer placing the woman upon her back, with her perinæum free over the edge of the bed.

757. Before we proceed to the use of the instruments, we should apprize the friends and the patient of their necessity—it rarely happens that the patient is alarmed at this alternative; as a very short explanation of the mode of action of the forceps always satisfies her; for we have only to say, that the natural powers are insufficient; that the situation of the child requires immediate relief, as its longer continuance in the passage might be fatal. But, at the same time, we must not give any positive assurance of its safety by the operation; though its chance should be represented as increased. Cause her to think the instruments an artificial pair of hands, whose use is to clasp the head of the child, and thus promote its delivery; and she becomes at once reconciled to their employment.

758. We should take care, before we use the forceps, that the bladder be discharged of its urine, either by the catheter, or by a voluntary effort of the patient; and that the rectum be unloaded by a simple injection, if it has not been emptied a short time before; also, that the vagina, external parts, and instruments, be well lubricated with hog's lard, or soft pomatum; and the latter warmed by being placed in warm water.*

b.—The Condition of the Uterus and Soft Parts.

759. The forceps should never be employed, whatever may be the emergency, before the os uteri is sufficiently dilated, or

* In warming the forceps, care should be taken that the water is not too hot; it will be sufficiently warm, if the hand can just be borne in it. It is proper, even in warm weather, to observe the precaution of warming the forceps.

readily dilatable, and the membranes ruptured. Were we to attempt their application before this period, we should do much mischief; if not altogether be foiled in our enterprise. We must, therefore, wait until this has taken place; but we should endeavour to promote this condition by every means which may be compatible with the existing situation of the woman. This may sometimes be by blood-letting, as in convulsions, &c., or by laudanum, as in certain kinds of exhaustion, &c., but never by force. We are told that the application of the belladonna to the os uteri has been useful for this purpose; but of this I have no experience. Chausier recommends the extract of the belladonna, with great confidence, in cases of rigidity of the os uteri. He causes it to be incorporated with some soft ointment, and applied by means of a particular syringe to the circle of the uterine orifice. In half an hour, or in forty minutes at farthest, after its application, he declares, the orifice of the uterus becomes so much relaxed, as to offer no farther resistance to the efforts of the body of the fundus.—(*Considerations sur les Convulsions qui Attaquent, les Femmes Encientes, p. 22.**)

760. Should the membranes be entire at the time we are about to operate, we may very readily effect their rupture by artificial means; but this should not be done until the os uteri is in a proper condition for the operation. It would be desirable, that the external parts should also be disposed to yield readily before we commence; but this is of much less importance than the relaxation of the os uteri; for these may be dilated gradually by the instruments, or made to yield by the application of lard or soft pomatum.

c.—Application, and Mode of Action of the Forceps.

761. The proper application of the forceps, in each situation of the head, has ever been considered as an achievement of difficulty. It requires a complete knowledge of the various divisions of the pelvis; an acquaintance with the construction of the child's head; and the mode of ascertaining its precise situation,

* Since writing the above, Dr. James and myself had a case of the most rigid os uteri either had ever witnessed. In this case we tried the belladonna, without the slightest advantage. We, perhaps, did not apply it as effectually as Chausier, as we were not in possession of his syringe for this purpose. Should another case occur in which I should think it advisable to employ this drug, I would introduce it by means of a sponge well saturated with the extract—previously reducing its tenacity.

in the cavity which contains it, &c. It will also be necessary to the success of the operation, that the practitioner understands the construction and mode of action of his instruments, and have, by practice, acquired some facility in placing them. It has been considered by Dr. Denman, as uncertain, whether the art of midwifery has been benefited, or injured, by the introduction of instruments into its practice.* That much mischief has been done by the ill-judged, and worse-conducted application of the forceps, I have had reason to know; but the abuse or wrong use of a thing by no means furnishes a logical conclusion against its proper use. Indeed, were we to admit this reasoning in almost any concern of human life, we should have a most reduced catalogue of real benefits; and were it legitimate to urge it in the practice of physic, or surgery, we should scarcely dare to prescribe an article of the materia medica, or venture to employ a single instrument, of the very many we now consider essential to the exercise of these branches of medical science. Yet what practitioner would give up opium, camphor, mercury, bark, and a hundred other articles, because quacks, and ill-instructed people have abused them, or even destroyed with them? or who, in the practice of physic, would throw aside the trephine, the scalpel, the gorget, or the amputating knife, because either of these instruments in the hands of the unskilful might be mischievous?

762. Let those who are to practise midwifery, become well acquainted with its elements, before they commence it; then gradually proceed to the exercise of the more difficult operations connected with it, and the clamour against the use of forceps, will, in great measure, cease, because there will necessarily be less reason for complaint. A severe probation awaits an upright, and conscientious man, upon his introduction to the practice of midwifery; for, if he be such, it will be a long time before he will dare to flatter himself, that he can do that which is best for his patient: and until he can, he will not be satisfied with himself—but this very distrust will, very probably, lead him to cul-

* I am convinced, that if the forceps be judiciously employed, the lives of very many children may be saved; and that the death of the mother would be a rare occurrence. Dr. Davis declares, "In my own practice, as one of the physicians to the Maternity Charity of London, which is beyond comparison the most extensive obstetric institution in Europe, I have the satisfaction of being able to assert, that I have never incurred the misfortune of losing a mother in consequence of a forceps operation."—*Elem. Oper. Mid.* p. 274.

tivate his talents by constant reading, that he may keep pace with the improvements in his profession, and seek the aid of those better qualified than himself, when difficulty presents itself.

763. Much of the embarrassment, and it may be safely added, the risk, in the application of the forceps, might be obviated were every gentleman, during his medical studies, to prepare himself by the frequent application of these instruments upon the machine under all the various conditions the head may offer itself within the pelvis—but I am sorry to say, this mode of acquiring knowledge is not sufficiently appreciated by those to whom it would be of the most direct and essential service. There is a tact in every operation, which is indispensable to its well performance and success; but this can only be acquired by its frequent repetition—for what would be said of the surgeon, who expected to acquire a knowledge of the anatomy of the part upon which he is about to operate by dissecting the living fibre, for the first time in his life? or, who could expect a man to apply the forceps with skill, the first time he attempted it upon the living machine, without a previous exercise upon the artificial one? The same observations will apply to turning.

764. But it would be unfair to charge all the mischief which has followed the use of forceps, to the ignorance of those who have employed them; or to the action of the instrument itself—much is justly attributable to the views which many celebrated men have taken of their necessity, or utility, as well as to the rules they have laid down for their application. In many instances, the evils which appeared to follow their use really existed before they were employed; but which might, I am persuaded, in many cases have been prevented, had a timely and judicious use been made of them.

765. The following case, which is every way in point, occurred to me a short time since: A lady with her first child, felt slight pains for several hours before she thought it necessary to send for me. The pains when I first saw her were pretty frequent, but not very protrusive; the external parts rather rigid, the os uteri not freely dilated, and the membranes were entire. After waiting two hours, the pains became more effective, and the head soon occupied the lower strait—two hours more were given, at the end of which time the vertex was about to emerge under the arch of the pubes, and the perineal tumour was formed. The pains now became more distant and less forcing; while the ex-

ternal parts remained rather rigid, but not obstinately so. The ergot was now given at three several times, but without producing the slightest increase of energy in the contractions of the uterus. I now proposed the forceps;—but their employment was obstinately resisted; and as no advantage whatever was derived from the delay, and as the perinæum was very much, and permanently distended, I became uneasy, and represented as forcibly as I knew how, the necessity of immediate delivery by the forceps. I presented for the consideration of the patient, the advantages of immediate delivery, and the probable consequences to both her child and herself, if it were not complied with; but nothing could prevail upon her to submit; she however promised, that if she were not better in another hour, she would comply with my wishes. This hour, like the six preceding, passed away without the hoped-for advantage. She now consented to submit to any thing I judged proper for her relief. But I thought it proper, before I applied the forceps, to state to the friends my fears, that serious consequences might follow from this long and unavailing delay, though the delivery could be easily accomplished. I applied the instruments; and in less than fifteen minutes she was delivered, contrary to expectation, of a living child; and also contrary to expectation, the patient appeared to be very well, except that the catheter was employed two or three times for emptying the bladder. On the third day the urine was discharged by voluntary efforts, and every thing seemed to promise well, except a burning and benumbing pain that was felt at the extremity of the coccyx and perinæum: this increased so much as to require anodynes and warm poultices. About the eighth day, sloughing of the perinæum commenced, and proceeded down to the sphincter ani, and some distance up the vagina. The parts have healed, however, more fortunately than could at first have been expected; the perinæum almost alone having suffered; leaving the rectum safe, and the vagina without serious injury—the case now resembles a lacerated perinæum.*

766. Dr. Denman, more perhaps than any other man, is chargeable with perpetuating errors in the use of the forceps, because, he is considered the highest British authority upon the subject. In his attempt at precision, he has created confusion; and, in his desire to generalize, he has made so many exceptions, that his

* I have delivered this lady safely twice since the above case occurred.

Aphorisms are no longer rules. The necessity for using the forceps he has taken principally from the time the head has tarried at the lower strait or passage, and the condition of the woman; without the slightest regard to circumstances, which may complicate the labour, or make a departure from the rule necessary to both mother and child. His aversion to instruments made him restrict their powers to such narrow limits, as to render them scarcely subservient to the art; and he reduced the cases proper for their application to so few, and so peculiar, that they are scarcely to be met with, that the forceps may be employed.

767. Thus, we find that Dr. Denman's fourth Aphorism declares that "the intention in the use of forceps is, to preserve the lives of both mother and child:" thus far good; yet in the very next sentence he says, "but the necessity of using them must be decided by the circumstances of the mother only;" that is, as I understand it, and as I believe every body else, means, we are not to deliver with a view to save the child, unless something threaten the mother. Is not this sadly and improperly limiting the utility of the forceps? for what security have we, when danger assails the mother, that the child will not perish before we are justified in delivering it, agreeably to the opinion of Dr. D.? Let us again suppose that the body of the child is delivered, and that the head cannot be made to pass, either from the want of ordinary power on the part of the mother, or from the extraordinary size of the child's head as regards the pelvis; are we to permit the child to perish because there is no "circumstance," that is, as I understand it, no danger threatening the mother, to authorize immediate delivery by the forceps, though he just expressly declared their "intention" is to save the lives of both?

768. His fifth Aphorism declares, "it is meant when the forceps are used to supply with them the insufficiency, or the want of pains;" here is a plain and positive direction, one that the common sense of mankind would at once agree to be sound and proper, one that would justify in the absence of sufficient, or efficient pains, the employment of forceps to supply the deficiency of the natural powers; but all this prudent and well-tested direction is destroyed by the next member of the Aphorism; namely, "but so long as the pains continue, we have reason to hope they will produce their effect, and shall be justified in waiting.

769. In the Lond. Med. and Phys. Jour. Aug. 1825, p. 157, I am indirectly charged with misquoting Dr. D's. fifth Aphorism, which I take this opportunity to disclaim. I quoted from an

American republication of the Aphorisms, and agreeably to that, I find I am correct. My observations on these Aphorisms were made more than twenty years ago; and if there be a discrepancy in the two texts, it may have arisen from a subsequent change in Dr. D's. opinion on this subject; as the reviewer quotes from the sixth edition.* The additional sentence, "*with any degree of vigour*," alters the matter, little or none, in my opinion—"for with any degree of vigour," is extremely indefinite; for *the degree of suffering* may lead to the belief that force is always commensurate with pain; than which there can be but few greater mistakes; especially in cases like those under consideration. For the cases in which the most suffering is endured, are often those in which we find labours the slowest. Had the sentence read, "so long as the natural pains continue with vigour," the meaning would have been clear; and it would have authorized the alternative of the forceps, when this was not the case. As it stands, even in the reviewer's quotation, I am persuaded, every inexperienced practitioner would feel himself justified in waiting too long.

770. I must still insist, that if this Aphorism have any meaning collectively, it forbids the use of the forceps so long as there are pains, however feeble or transitory these may be, or however insufficient for the end proposed—the value of pains must be estimated by their power upon the body to be moved, and not by the degree of suffering the woman may endure. But let it be recollected, that beside the risk the child runs by long delay in the passage, the soft parts of the mother are suffering from the long pressure of its head; subjecting them to contusion, inflammation, sloughing, &c., and this to comply with a prejudice against the proper employment of the forceps! But let us attend to what Dr. Merriman, one of the most zealous admirers of Dr. Denman, says upon this subject. He was called to the aid of a midwife in a case where "the vertex was actually protruding through the os externum," but where it was necessary to draw off the urine, as the woman had passed none for many hours—this was done, but he says, "On passing my finger into the vagina, the vagina felt so excessively hot and burning, as convinced me that the delivery ought not to be trusted to the efforts of nature, but that the child must be removed with all proper expedition, or otherwise, *there*

* On consulting the works of Dr. D. as edited by Dr. Francis, I find the Aphorism precisely as I have quoted it; and Dr. F. declares, he has published from the last edition, corrected by the author.

was great reason to apprehend that mortification and sloughing of the vagina would ensue." He accordingly delivered her with the forceps. His conduct upon this occasion, leads him to the following reflection: "It is laid down as a rule in practice, and it is one of those rules which, being founded in reason and experience, ought not lightly to be deviated from, that the head of the child should be in a situation capable of being delivered by the forceps for at least *six hours* before they are had recourse to." "But a rigid observance of it in the case I have related, would have proved highly injurious, if not fatal, to the patient, as it is apparent, that a very high degree of inflammation in the vagina, and parts adjacent, was just upon the point of taking place; and had the head of the child been suffered to remain there much longer, so much inflammation must necessarily come on, as might have proved incontrollable." In this case the head was "down low in the pelvis" but two hours. (Edinb. Med. and Phys. Jour. for 1810.)

771. Dr. Davis also relates a case completely illustrative of the point I have attempted to enforce; namely, that the soft parts of the mother may, by the long delay of the child's head in the passage, suffer extensive, and irremediable mischief. In the case alluded to, the patient was eighteen hours in labour; and, "during no stage of this labour, could it be truly asserted, that there was not some progress made." The child "effected its transit through the pelvis, certainly in the midst of such a tempest of struggles, as I think I have never witnessed on any other occasion."

772. "The patient died on the tenth day after delivery." "On inspecting the body after death," "the cause of it was discovered to have been a large abscess, which seemed to have implicated all the structures at the superior part of the cavity, and towards the left side of the pelvis, and of which the left ovarium, probably dangerously contused during labour, had all the appearance of being the nucleus." (Elem. Oper. Mid. p. 149.)

773. I may also add, that the head of the child itself suffers very severely from a long-continued pressure upon it; producing extensive extravasations under the scalp, as well as sometimes abscess of this part, as is said to have happened to a child that was delivered at the Royal Maternity Charity, after an unusually tedious and painful labour. Baudelocque gives an instance of the scalp sloughing, &c. Vol. III. p. 161.

774. In a word, experience satisfactorily proves, that much risk, both to mother and child, is constantly incurred, by the head resting too long upon the lining of the pelvis. Dr. Davis mentions a case, p. (156,) where, after a labour of this kind, "the parietes of the vagina" were much swelled, and required blood-letting and leeching to subdue it.

775. It is merely intended, by what is just said, to justify the assertions I have made against Dr. Denman's reluctance to employ the forceps, and not a critique upon his Aphorisms—I have offered this elsewhere. See "Essays on various Subjects connected with Midwifery," by the Author.

776. Dr. Osborn* carries this reluctance still farther; to a degree, indeed, I think reprehensible, as it seems to militate against the interests of society—but he has not done equal mischief with Dr. Denman; because his authority was not equal. He requires, before the forceps are applied, that "the powers of life be exhausted; all capacity for farther exertion to be at an end; and that the mind be as much depressed as the body; and would at length both sink together under the influence of such continued but unavailing struggles, unless rescued by means of art."

777. I would ask with what prospect of success could art interfere under such a complication of evils? the woman might be delivered, but what would be her after condition, or that of the child?—why, one would be subjected to all the evils which a too long delayed delivery would produce, if not death; and the other, to almost inevitable destruction.

778. Besides, the objections against the forceps are founded upon an erroneous estimate of their tendency—that they have been misused I admit; and so has almost every thing else; but that they have been productive of more good than evil, I am every way persuaded. As regards the child, there can be no hesitation; and as they may have affected the mother, I am certain they have been highly beneficial. It is entirely within my recollection, when cases similar to those now treated by the forceps were relieved by the crotchet—the child a certain victim, and the mother a probable one. In the year 1794, I was sent for by a midwife, to a woman who had been six and thirty hours in severe labour with her first child; and she nearly forty years of age. Upon examination, the posterior fontanelle was found

* Essays, p. 45.

at the left foramen ovale; the pains had been violent and frequent, but were now feeble and transitory, making no impression upon the child. I introduced the catheter, and discharged a large quantity of water; then applied the forceps, and soon delivered the child. So soon as it was born it began to cry; and when liberated from the placenta, I handed it to the midwife, who received it with averted face and streaming eyes. I inquired of her what had so affected her; she answered by pointing to the child, and saying, "who with any feeling could help it? a poor child to be alive with its head open!" As I did not understand her, I desired she would explain herself; this she did, by saying she would not have cared so much, had it been killed outright; but to be wounded and alive, was truly shocking!" I still insisted upon farther explanation, as I yet did not understand her, and at the same time uncovering the child, asked if she supposed it was hurt, and if she did she was much mistaken. She now examined the child; and to her utter astonishment found it without blemish. She then told me, she would have sent for me long before, but for the horror she had of having the child's head opened; which, she assured me, had been the uniform practice upon such occasions, whenever she had sent for a physician. The influence of this case upon many of the midwives of this city, procured me many opportunities of applying the forceps.*

* We are not alone in making a charge against such practitioners, as substitute the crotchet for the forceps, and with similar results from the mutilation. Mr. Dease states an instance, "where the child was miserably dragged alive into the world, with a great part of the brain evacuated." And Dr. Beatty adds, "I can never forget a scene of horror to which I was a witness in the year 1800. I was called upon to see a very young lady, in labour of her first child, who was under the care of one of the oldest and most eminent practitioners in this city, (since dead:) her labour was most violent, which she bore with great impatience and noise. The head had been down in the perinæum (he said) several hours; I proposed to give more time and an opiate, not doubting the powers of nature, or to try the forceps, which he declined on account of its being her first child, and the apprehension he entertained of her being exhausted; and finally he opened the head. The operation, as it always does, excited extraordinary uterine action, and before it was well concluded, or the brain evacuated, so as to lessen the bulk of the head, the child was propelled into the world alive and crying. The old gentleman whose patient she was, was a person of very fine feelings, and the reader may imagine his sufferings on viewing the effects of a rash and ill-judged operation; he declared no earthly consideration should ever induce him again to witness the application of the perforator."

Dr. Beatty also remarks, "that similar instances had (he had understood) oc-

779. However strongly I may be impressed with the utility of the forceps, I should not feel myself warranted to use them as often as they appear to be in Great Britain, and on the continent of Europe. The frequency with which they have been employed, in some instances is really alarming; and I had like to have said must have been too often unnecessary.* In my own proper practice, I am persuaded I have not employed them oftener than once in three hundred and fifty cases; though I have been under the necessity of using them very frequently in the practice of others.

780. I must not, however, be understood as reflecting upon any individual, by the last remark—my meaning will be properly understood, when I state that some years ago, the practice of midwifery was very much in the hands of females. These females were not competent to the use of instruments; consequently, when they were necessary, others had to perform this duty for them; it fell to my lot to do much of this business. By this means I

curred in this city (Dublin) in one of which humanity prompted the accoucheur to plunge the child into a vessel of water to put an end to its existence and cries."—Observations on the use of instruments in cases of difficult parturition and protracted labour. By John Beatty, M. D. &c. (*Dublin Med. Trans. from Johnson's Medico-Chirur. Review, for July*, 1831.)

* The following statements upon the subject in question, I extract from Dr. Davis's "Elements of Operative Midwifery."

"It has been stated by Prof. Bäer, (see Medecina Obstetrica, p. 443,) that the forceps have been used in the practice of an individual, or of individuals, whom, however, he has not chosen to name, in *nearly* one case out of every three labours. Prof. Hagen, of Berlin, delivered 39 women out of 350, or 1 in 9, with forceps. Prof. Nägele, of Heidelburg, reports, that in the practice of the lying-in institution of that city, for the years 1817 and 1818, he used the forceps once in 53 cases. Mr. Burns gives the proportion of Prof. Nägele, as "very much corresponding with those of his own lists." In a statement of presentations at La Maison d'Accouchments, between December, 1799, and May, 1809, furnished by the late M. Baudelocque, we have the proportion of forceps to the whole number of labours, as 1 in 353. Madame Boivin, 1 in 212. Madame Lachapelle, 1 in 166. At the obsteric School of Gottingen, 1 to between 18 and 19. At the University of Stockholm, 1 in every 100. Dr. Luders, 1 in 109. M. Lobstein, 20 times in 712 cases. Prof. Böer, of Vienna, once in 238 labours. In Dr. Clarke's Abstract of the Dublin Lying-in Hospital registry, it is stated, that the forceps were used 14 times in 10,387 cases."

Dr. Davis considers the proportion of 1 in 53, which is approved by Prof. Burns, at least 400 per cent. too great; and is of opinion that the forceps are not required more than once in 300, or, at most, 250 cases.

From the above statements, it evidently appears, that the forceps, in the hands of some practitioners, have been most wantonly used, and in those of some others, as improperly withheld.

have seen very many forceps cases, but the greater part of these did not belong to me as original cases.

781. But let me ask, what is to be feared from a proper application of the forceps? is their mode of action, when well directed, such as to do injury to either mother or child? certainly not —then there is nothing to be apprehended from their structure, application, and mode of action; since necessarily, they neither cut nor contuse mother or child; neither do they create unnecessary pain, nor inordinately augment that which may be present; but are truly calculated, in the language of Dr. Denman, to supply the insufficiency, or want of labour-pains; if this be so, and it is so admitted by Dr. D. himself, why should they be condemned, because they may, like every sublunary good, be abused?

782. Let me endeavour to strengthen my case, by considering, 1st, their structure; 2dly, their application; and 3dly, their mode of action.

783. Their structure is such as to offer the greatest possible security to the child—the breadth of the clams being so great,* as to prevent any partial or injurious pressure, and the excavated diameter between the blades, even when the handles are pressed pretty closely, will permit the transversal diameter of the head of a child of ordinary size to lie between them, without any or with very little inconvenience; the length and the strength of their handles are such as to permit compression wherever that compression may be necessary.

784. The proper application of the forceps consists in their complete adaptation to the sides of the head of the child, or as nearly as may be over its ears—when fixed upon any other part of the head, it is but an exception. When placed as just suggested, the head is embraced in the direction of its oblique diameter, (82,) and the small diameter presents itself between the blades of the instrument. The advantages of this position of the forceps, are, 1st. That the head is seized in its smallest diameter; and this diameter is so little increased by the thickne - of the instrument, as to offer no additional difficulty to the delivery. Indeed, it may be justly doubted, if the forceps increase the diameter in the least, as their thickness is lost by the yielding of the

* Dr. Davis, (Elem. Oper. Mid.) thinks the breadth of the French forceps is too narrow, and proposes those of much greater breadth. I have never found any inconvenience in the use of these instruments, which was exclusively chargeable to this circumstance.

head of the child; for compression to a certain extent must always be made during the operation of the instruments, and the united thickness of both blades does not exceed four or five lines. 2dly. When the head requires to be compressed, the compression will be in the direction of the short diameter of the head, and will oblige the vertex to extend itself, (however little,) in the direction of the oblique diameter; as its construction gives a tendency to that direction.

785. The proper application of the forceps farther consists in such a direction of its blades, as will permit their concave edges to come under the arch of the pubes, at the last period of labour —this rule is never to be violated. They must be placed exactly parallel upon the sides of the head, that they may lock; and it is ascertained that they are well placed, by their locking without the necessity of force. Should they not lock spontaneously, if we may use the expression, force must not be used to make them— for if it be employed for this purpose, it must necessarily be at the expense of the bones of the head, and, perhaps, the destruction of the child. If the handles do not readily join upon the introduction of the second blade, we may be certain one of them has a wrong direction; it must be ascertained which, and, by a judicious management of the one in fault, make it join, without force, its fellow.*

786. When the handles join kindly, we may be certain the blades are properly applied; and one of the greatest difficulties of the forceps is overcome.† The degree of compression to be applied must be determined by the size of the child's head; its suppleness; and the capacity of the pelvis—the less compression the head requires, the easier, and the more successful will be the operation.

787. The forceps have two modes of action; *a*. That of compression in the first instance; *b*. and that of traction and compression, in the second.

* Nothing more clearly points out the importance of an entire knowledge of the mechanism of labour; and the great necessity of learning to detect the exact position of the head within the pelvis by means of the sutures, than the difficulty an ignorant practitioner always finds in ascertaining which of the blades of the forceps is in fault when they do not lock.

† We may make one exception, however, to this: namely, when the head is high in the pelvis, and the extremities of the forceps have only been applied upon a small portion of it: in this case the head is not embraced by these instruments; it is only partially included, and they will consequently slip.

a.—Of Compression.

788. I have already stated, that when the forceps are well applied, they traverse the head in the direction of its oblique diameter, or nearly so; and that the compression which it may suffer, is in the direction of its small diameter: now, as we cannot determine à priori, the size of the head, the firmness of its bones, nor the resistance it will meet with in its passage, we cannot possibly calculate the force that will be necessary to reduce the head sufficiently to permit it to pass through the pelvis; I can, therefore only say, the less force it is necessary to exert, the less the head will suffer; and consequently, so far as this operation is directly concerned, the greater the chance will be of preserving the life of the child—and also, that the converse of this is equally true. Inattention to this latter fact, or a want of knowledge of it, has given rise to many of the objections which are urged against the forceps—for it has occasioned their application upon any portion of the head; and the handles forced to lock, at the expense of the fracture of the skull;* it has occasioned them to be employed, where there was so much disparity between the diameters of the head of the child and the pelvis, that it could only be delivered, after the forceps had nearly broken down its texture: need I say what mischief would follow such displays of ignorance? the child dies by a species of murder; and the mother, especially in the latter instance, is subjected to inflammation, gangrene, sloughing, or even death.

789. It has been imagined, from the elongation which the head sometimes permits in long-protracted labours, that it would bear with impunity any compressing force which might be applied; but this is an error; and an error of great magnitude; for by act

* I was once called upon to determine whether any thing could be done for a newly born child, which had been most unskilfully delivered by the forceps.—The frontal bone was severely indented by the edge of the forceps; and one eye entirely destroyed, by the extremity of the blade having been fixed upon it: yet it was born alive. The case was of course a helpless one; and the child fortunately died, in a few hours after its birth. I was once shown a blade of the forceps, which had been excessively bent, by an endeavour to make it lock. In this case, the forceps were exhibited in triumph, as a proof of the great difficulty the operator had to encounter, in effecting the delivery; and as additional evidence of this, he declared, that no strength was sufficient to deliver the head, as both his, (and he was a powerful man,) and that of an equally ignorant practitioner, were unavailingly exerted, alternately and collectively—he at last delivered with the crotchet, after having experienced very great difficulty in withdrawing the bent blade of the forceps.

ing upon it, the benefits of the forceps have not only been undervalued, but really called in question. I must then, to prevent the perpetuation of this mistake, as far as may be in my power, declare that the head will bear with safety but a moderate diminution of its bulk, by the compressing force of the forceps; and oftentimes, much less than is sometimes observed to take place, when the child has been delivered solely by the exertion of the natural powers: the reason of this is obvious; we cannot, by any contrivance of art, imitate this gradual, (though not always safe,) modification of the head; consequently, when it becomes reduced by a suddenly applied force, like that exerted by the forceps, it must be at the hazard of doing much injury, or it may be even fatal to the child.*

790. This fact limits the powers of the forceps more than is commonly supposed, even by those who employ them with the laudable hope of saving the lives of both mother and child; but who frequently experience disappointment, because not aware of it. The forceps, therefore, in the hands of those who consider them as a means by which a difficult labour may be terminated, but who apply them without rule, or without a knowledge of their mode of action, are nearly as fatal as the crotchet itself; because they are regardless of the degree of compression they impose upon the head during its extraction.† It would seem, then, from all experience to follow, that from a pelvis with less than three inches, or even three inches and a half in its small diameter, a child's head at full time cannot be made to pass with safety, by means of the forceps, unless there be an unusual degree of suppleness in the bones of the cranium; or the head itself unusually small. If these facts were more generally known, or more constantly kept in view, we should have fewer complaints against the forceps, because there would be fewer victims to their ill-directed power upon the head of the child, and fewer evils following their application upon the soft parts of the mother.

* Dr. Davis, however, asks, "whether in some particular circumstances it might not be found more eligible to apply to the fœtal head a certain required amount of compressing force, within a short time, artificially by means of the forceps than to await the result of a more gradual and protracted application of an ultimately equal degree of force by the natural agents of parturition?"—*Elem. Oper. Mid.* p. 139.

† I have more than once witnessed the truth advanced here. I have seen the whole length or nearly the whole length of the frontal bone cut through, by one of the sharp edges of the forceps, by an effort to compress it; and at another, I have seen the parietal bone in the same wretched plight, from the same cause.

b.—Compression and Traction.

791. It is in but very few cases that we can avoid a pretty constant compression, from the moment of their application upon the head of the child until its final delivery. With a view to diminish the permanency of this pressure as much as possible, I am in the habit of not tying the extremities of the handles, as is usually recommended, that I may after each tractive effort, permit the instruments to expand, as much as the elasticity of the head, and the restricted capacity of the pelvis will permit. In this, I think there is decidedly an advantage to the child; and no possible injury can happen from it to the mother.

d.—Mode of Acting after Application.

792. Each effort made to advance the head after the forceps have been applied, must be considered as a renewed compression, though the lateral pressure may be but very little increased; for in order that the head may advance, the curved extremities of the instruments must necessarily act at nearly right angles with their sides; consequently, the transverse diameter must be a little increased, or rather not so much diminished, as if the pressure were strictly and only lateral; this consequently must, to a certain extent, increase the difficulty of delivery; or, in other words, increase the necessity of a stronger tractive force. This, however, is in some measure, if not altogether, obviated by making each blade of the forceps act alternately as a lever in conducting the delivery; and this is the usual direction given for their employment, without expressing the reason for it—hence, when the instruments are fixed, we act with much greater effect, by drawing from blade to blade, than if we continued the force in a direct line; for, by making the handles describe a portion of a circle, by passing them from right to left, and the reverse, during the traction, we each time, (when the head is moveable,) make a part of its side sink lower into the pelvis, and advance towards the external opening of the pelvis.

793. The extent of this motion of the handles must, at first, be very small, especially if the head be high in the pelvis; or we shall be making fulcra of the soft and bony parts of the mother at each effort, which must always be carefully avoided. As the head advances, we may enlarge the space through which

the handles are to move, but it is never to be so extensive as to make the instruments press with much force against the bones, forming the arch of the pubes, and the external soft parts of the mother.

794. The motion just spoken of is at first horizontal, or very nearly so; but as the head advances, we are obliged to elevate the extremities of the instruments, and this in proportion as it approaches the vulva, or as it is about to escape the external machinery; so that at the last moments, the extremities of the handles are laid nearly upon the abdomen of the mother. During the operation, our tractive efforts should coincide with the action of the uterus, whenever that remains; when the uterus has ceased to act, we should permit as much time to elapse between each exertion, as generally takes place between the pains at this period of labour, that we may not exhaust the woman; that we may secure the tonic contraction of the uterus, and that we may not make too sudden and too long continued compression on the child's head.

795. It is by no means unusual for the pains to cease after the application of the forceps; and we are obliged, in consequence, to perform the delivery without their aid—I am at a loss to account for this; for it is contrary to what might reasonably be expected. When, however, they continue with even moderate force, I have been in the habit of disengaging the instruments, when the head is about to pass through the external parts, that these may be the better supported, and the risk of laceration diminished. Should there be no pain, we are then constrained to continue our efforts, until the head is without.

796. In removing the forceps before the head is delivered, I am aware I am departing from high authority; for Dr. Denman lays it down as a rule, that "in every case in which the forceps have been applied, they are not to be removed before the head is extracted, even though we might have little or no occasion for them." But notwithstanding this positive injunction, I am entirely persuaded, from experience, it is the safer practice, if we regard the integrity of the soft parts of the mother worth preserving.

Sect. II.—*Recapitulation.*

797. As I have dwelt upon the use of the forceps longer than I had intended, I shall sum up in a few words the principal points

intended to be insisted on, or illustrated: 1st. That the long French forceps are preferable to the English short forceps, even for the unskilful; 2d. The best position for the woman is that recommended for turning; 3d. The bladder and rectum are to be emptied before the forceps are introduced; the former by the catheter, when the woman cannot command the discharge; and the latter by an injection, if it has not been done spontaneously, a short time before; 4th. The patient and friends are always to be apprized of the necessity and propriety of the operation before it is resorted to; 5th. The vagina, external parts, and the instruments are to be coated by fresh hog's lard, or soft pomatum, and the instruments always warmed; 6th. The forceps are never to be employed before the os uteri and external parts are relaxed; and the membranes ruptured; 7th. This relaxation to be promoted by the best adapted means; 8th. Should the uterus be in a proper condition for the operation, and the membranes at the same time entire, the latter must be ruptured, that the application of the forceps need not be delayed, when the case requires immediate interference; 9th. When the circumstances of the case require the use of these instruments, the application should not be too long delayed, from an imaginary fear that the woman might suffer from their use, or from an ill-grounded hope that the woman may deliver herself—we should, therefore, not permit her to be exhausted, or the child to perish, because feeble or inefficient pains attend, or because the head of the child has not been six hours in the passage; 10th. The blades of the forceps are always to be applied to the sides of the head—that is, over the ears of the child—when necessity (which is very rare,) obliges us to depart from this rule, it is but an exception to the rule; 11th. They must be applied so that their upper, or concave edges, will come under the arch of the pubes, at the last period of labour; 12th. Should the handles of the instruments not join with ease, we may be certain they are ill-applied; the cause of their not locking must be ascertained; and they are never to be joined by force; 13th. The head will not permit with safety, but a moderate approximation of its sides; therefore, when compression is carried beyond this point, the destruction of the child is sure; 14th. With a view to prevent all unnecessary, and too long continued pressure upon the head of the child, the handles of the forceps should not be tied; but after each tractive effort they must be permitted to expand themselves, by ceasing to press upon them; 15th. Each traction should be made from blade to blade;

that each may act as a lever upon the head; 16th. The extent of the motion of the handles for this last purpose, must be regulated by the distance the head is from the external parts; for the less the head is advanced, the more circumscribed should be the motion; and the reverse—this motion is at first nearly horizontal;* 17th. The external extremities of the instruments must be raised towards the abdomen of the mother, in proportion as the head advances through the external parts; 18th. Should pains continue until the head has nearly passed through the external parts, the forceps may be removed; but if none attend, the delivery must be completed by the forceps.

Sect. III.—*General Observations upon the Forceps.*

798. In delivering by means of the forceps, every attention should be paid to delicacy, and every care should be taken that the patient be not subjected to unnecessary pain; to fulfil the first, the patient should not be exposed; this cannot be necessary, even for the drawing off of the urine, should that be an essential previous step. The operator must become familiar with the introduction of the instruments without the aid of sight, more especially as this cannot serve *him*, and must, if employed, be highly offensive to the *patient*. He must perform his duty under cover; and the guide for his instrument must be the hand in which the instrument is not held—this, of course, will sometimes be the right, and at others the left—two or three fingers must be introduced so as to touch the child's head when at the lower strait, and the extremities of them must be insinuated under the edge of the os uteri, if that is still down; and upon the plane thus formed by the fingers, the instruments must be conducted; with this precaution he shall give no unnecessary pain; since it will prevent the edge of the uterus from being included between the blade of the forceps and the head of the child.

799. Should the head of the child have escaped from the os uteri, he must pass the instruments in such a manner as shall conduct their extremities under its edges; this is done by keeping the point of the blade pretty firmly passed against the scalp of the child as it passes into the pelvis—should it, however, meet with any obstruction in its passage, the difficulty must be overcome by address, and not by force—it may be a fold of the scalp, or it may be the ear, by which the point of the instrument is

* That is, from one thigh of the mother to the other.

arrested; gently depressing the handle of the instrument, or varying its direction a little, will almost always surmount this difficulty.

800. Should much pain be experienced by an attempt to lock the blades when well applied, as regards their position, we may be pretty certain a portion of the neck of the uterus is included in the grasp of the instruments—we must inquire on which side of the pelvis the pain is felt, and withdraw the blade from it, and introduce it anew. Should cramps be induced, we may sometimes relieve them by elevating or depressing the handles of the forceps.

801. The greatest care must be taken before we begin our traction, that no portion of the mother is included in the locking of the blades—this must be done by passing a finger entirely round the place of union. This accident very rarely occurs in the use of the long forceps, unless the head is high in the pelvis—with the short it is frequent, even under the direction of the most careful operator; this forms, in my estimation, a very serious objection to their employment. I was once called to a poor woman who had had a considerable portion of the internal face of the right labium removed, by having been included in the joint of the short forceps.

802. When the instruments are properly adjusted, we should seize the hooked extremities with the right hand, and make them approach each other in the most gradual manner; and make no more compression than is absolutely necessary to secure a certain hold, or to enable the head to pass:* The left hand must be applied over the joint of the instruments, and in a manner that will permit the point of the index finger to touch the head of the child, which will enable him to determine the progress it makes. We commence the traction with a very small force, and gradually augment it to the extent we may judge necessary—we should finish the effort by gradually diminishing the force, until it comes to a state of rest; taking care, however, to maintain the advantage we have gained, by removing the pressure from the handles, and hooking two fingers in their curved extremities, and thus prevent the receding of the head. When we have indulged the ute-

* When the pelvis is deformed, and the relation between it and the head of the child is very strict, we are obliged to depart from this rule, and apply a much stronger compressing force; as the diameter of the head must be a little diminished, that it may pass: in this instance, the handles are to be brought together, and secured by a garter or riband.

rus in a sufficient interval, or upon the accession of a pain, we are to apply our hands as just directed, and act as before.

803. As the head is about to pass through the external parts, the left hand must forsake the instruments, and apply itself firmly against the now distended perinæum; and if there be sufficient power in the uterus to carry the head through the os externum, without farther aid of the forceps, they should be removed, as advised; but if not, they must be suffered to finish the delivery.

804. When the head is without, the same care should be exercised as was recommended in a natural labour; that is, not to hurry the shoulders through the pelvis; that the tonic contraction may certainly follow their expulsion.

805. It is frequently more convenient to stand to perform this operation than to sit; but a chair should be at hand, that we may use it after the head is delivered: we should order a sheet sufficiently folded, to be spread over our lap, that we may receive the child upon it, when the body is expelled. The funis must be cut at a proper time, and the rest of the delivery finished as on ordinary occasions.

CHAPTER XXI.

OF THE SPECIFIC APPLICATION OF THE FORCEPS.

806. Generally speaking, the difficulty of applying these instruments is in proportion to the remoteness of the head from the inferior strait, and the facility of application, as the vertex, or forehead, may be near the arch of the pubes. It would be well, were it always practicable, or a subject of choice, that the young practitioner should commence with the most simple cases, and gradually advance to the more difficult positions of the head—but as this is impossible under the circumstances of ordinary practice, he should, while in his power, become in some measure familiar with the application of the forceps, by diligently practising upon the machine: indeed, it would be highly advantageous to all who may be about to engage in obstetrical practice, to order a machine as an appendage to their instruments. By the use of this contrivance he can become well acquainted with every important presentation, and at the same time render himself master of their re-

spective mechanisms; he can familiarize himself to the application of instruments, and readily teach himself the routine of turning, &c.

807. I shall lay down the rules for the application of the forceps in every presentation as succinctly as the subject will permit, knowing from long observation, that nothing but a careful experience with the living subject can ever make a man adroit in their use. I shall therefore commence with the most simple cases, and gradually advance to the more complicated and difficult.

808. The various ways which the head of the child may offer to the pelvis, when it may be necessary to terminate the labour by the forceps, are,

809. *a.* 1st. Where the *vertex* answers to the arch of the pubes, and the *forehead* to the sacrum.

810. *b.* 2d. The reverse of this, the *forehead* to the pubes, and *vertex* to the sacrum.

811. *c.* 3d. Where the *vertex* is behind the left foramen ovale, and the *forehead* to the right sacro-iliac symphysis.

812. *d.* 4th. Where the *forehead* is behind the left foramen ovale, and the *vertex* to the right sacro-iliac symphysis.

813. *e.* 5th. Where the *vertex* is behind the right foramen ovale, and the *forehead* to the left sacro-iliac symphysis.

814. *f.* 6th. Where the *forehead* is behind the right foramen ovale, and the *vertex* to the left sacro-iliac symphysis.

815. *g.* 7th. Where the position of the head is directly transversal: 1st. Where the vertex answers to the left side of the pelvis; and 2d. Where it answers to the right.

Sect. I.—*a.* 1st. *Application of the Forceps in the first of these Positions.*

816. The woman about to be delivered with the forceps is constantly supposed to be placed upon her back, and every other circumstance arranged as already directed.

817. The first position in which we are to apply the forceps, Dr. Denman thinks can very rarely require them—this by no means comports with my experience; for I have very often been under the necessity of using them in this situation of the child's head; for any one of the causes which I have considered capable of complicating a labour, may happen at this period, as well as any other. What is there in this position which shall protect

the woman against flooding, convulsions, exhaustion, &c., and render immediate interference unnecessary? I can see nothing; for, though the labour is near its completion, it is not completed; and I am convinced, that in many cases both mother and child have suffered from the delay which Dr. Denman's repugnance to the employment of these instruments has created with the practitioners, who consider him the best authority. Were it necessary, it would be easy to give examples to prove what I have just said. (See 765, 771, 772.)

818. In this case, after duly preparing the forceps as already directed, we take hold of the male branch of the forceps with the left hand, and hold it as we would a pen when writing, while we introduce two or three fingers of the right hand into the vagina against the child's head, and under the edge of the uterus if practicable; we then hold the handle or blade nearly perpendicular, but inclining to the right side of the mother, and insinuate the extremity of the blade between the labia, and slide it along the fingers intended as a guide, until it reaches four or five inches within the pelvis; gradually depressing the handle as it advances, and as it embraces the head. It rarely happens that any difficulty is experienced in the introduction of this blade; its position, if properly applied, is strictly lateral; its concave edge being under the arch of the pubes, the pivot will have a vertical position, while the handle will be sustained by the edge of the perinæum. The instrument must be retained in this position either by an assistant, or by placing it on the knee, while you prepare for the introduction of the other blade—this must be taken in the right hand, as directed for the other blade; and must, like it, be conducted to its proper situation by two or three fingers of the left hand; when advanced as far within the pelvis as the first blade, the handle must be lowered and inclined towards the left thigh of the mother, until it crosses the first blade, and locks with it—if the instruments are properly applied, this will readily happen—the pivot will be vertical, and must be turned, that the blades may be secured in their position with each other—the handles are now to be seized, and the delivery conducted as already directed.

SECT. II.—*b. 2d. Application in the second of these Positions.*

819. This position, (810,) is by no means as favourable for delivery as the first, though not more difficult for the use of the for-

ceps; the presence of the forehead under the pubes, as I have already stated, (633,) always renders it more difficult for the woman to deliver herself; and sometimes is of itself a sufficient reason for the use of the forceps.* The application of the forceps, is, however, precisely the same as in the one just described; we are only to observe, in finishing the labour, to permit the vertex to turn backward, as it is described to do when speaking of its mechanism.

Sect. III.—*c.* 3d. *Application of the Forceps in the third of these Positions.*

820. The application of the forceps in this situation (811) of the head is more difficult than in the two preceding; owing to the oblique manner in which it offers at the lower strait. It must assume this position before it can offer its vertex to the opening of the pelvis, but it may fail to make this necessary change, and thus render the labour difficult; or the causes which may complicate any labour may operate at the moment the head has arrived at the place designated, and thus render the use of the forceps indispensable.

821. When the forceps are to be used, the male blade must be passed to the left side of the pelvis at about the same distance as before directed; it will almost always pass along easily, after having spontaneously assumed a change of position; this change carries the handle a little toward the left thigh of the mother, and gives to the pivot an oblique position, instead of the vertical one before spoken of—after the first blade is adjusted, the other must be passed nearly opposite to it, but a little higher, and immediately against the right leg of the pubes, and behind the right foramen ovale; the handle must be made to incline like its fellow

* Mrs. S., May 7th, 1827, in labour with her second child; the presentation was the fifth, but could not be reduced to the first by any effort I could make, owing to the large size of the child's head. After waiting unavailingly for several hours for the natural powers to effect the delivery, I was obliged to use the forceps. I have no doubt but the use of instruments would have been unnecessary in this case, had the vertex presented, as the pelvis was ample as ordinary, the parts well relaxed, and the pains frequent and powerful. As this child was of unusual dimensions, I will subjoin the measurement of several parts:

16 6–8 inches round the forehead and occiput.
19 1–2 " round the shoulders.
5 5–8 " round the arm and below the elbow.

The other parts of the body, proportionably large. The head of the child was lengthened considerably; but it recovered its shape in a few days.

to the left thigh; and, if properly conducted, the blades will lock; but in a manner that will enable the pivot to preserve its look towards the left groin of the mother.

822. When the instruments are joined, we are directed by Baudelocque and others, to turn the vertex towards the arch of the pubes; but this is certainly not always necessary; for I have usually found, that this took place spontaneously as I continued the traction. I have no doubt but this is occasionally necessary;* especially where the pelvis is rather narrow, or the head large, and when we find, after successive efforts, the head does not follow the proper direction, we may turn the vertex towards the pubes, by gradually bringing the pivot to a vertical position—when this is done, this case is precisely like the first of these positions, and the labour must be finished like it.

823. In several instances of this position, I have found it easier to introduce the second blade from below, pressing the handle of the first blade pretty firmly against the perinæum—that is, instead of having the handle high over the abdomen, to place it under the left thigh of the mother, and make the extremity of the blade penetrate from downward, upward: care must be taken not to place the female blade below the male, in this case.

Sect. IV.—*d.* 4th. *Applications of the Forceps in the fourth of these Positions.*

824. This position (812) unites the difficulty of the oblique situation mentioned just now, with the disadvantage of the forehead under the arch of the pubes; and, though the application of the forceps is precisely the same as in the last described position, it will nevertheless be a more difficult operation, for the reason just stated. At the last period, when the head is escaping, the vertex must be suffered to turn backward, as in the second position.

* Baudelocque tells us, that he has occasionally failed to establish the vertex under the arch of the pubes; and, in these cases, the head has passed through the inferior strait and external parts in a diagonal direction. I have witnessed this direction of the head in a number of instances, where the forceps were not employed; but it has only occurred to me once, when employing these instruments—when this happens, it is generally owing to the sacrum being too straight.

Sect. V.—*e.* 5th. *Application of the Forceps in the fifth of these Positions.*

825. This position (813) is of more difficult management than any of those I have yet described, owing to the necessity of placing the male branch above; and obliging the female branch to be placed below—but these difficulties may be surmounted by gentleness and perseverance, and by a just knowledge of the position of the head.

826. The male branch of the forceps must be conducted by the left hand behind the left foramen ovale; this must be done by passing the extremity of the blade upon two or three fingers immediately under the left leg of the pubes; the handle of course must be depressed in proportion to the advancement of the blade, and made to incline towards the right thigh of the mother; and, when correctly adjusted, the pivot will take an oblique position, and look towards the right groin of the woman. The female blade must be introduced on the inferior part of the right side of the pelvis, and adjusted so as to correspond with the first introduced blade—the handles must then be locked, and seized by the left hand at the extremities of the blades; while the right will take hold over the pivot; a finger to be placed against the head of the child, as before directed.

827. It is not generally necessary to turn the vertex towards the pubes in this case, any more than when it was on the opposite side of the pelvis; this will take place as in the former case, by observing the proper direction for the tractive forces.

Sect. VI.—*f.* 6th. *Application of the Forceps in the sixth of these Positions.*

828. The relations of the head and pelvis in this case, (814,) as regards diameters, are precisely the same as the one just described; and the forceps must be applied in the same manner. The same precaution must be taken at the final passage of the head through the external parts, to permit it to turn backward.

Sect. VII.—*g.* 7th. *Application of the Forceps in the seventh of these Positions.*

829. Dr. Denman, in his Aphorisms, seems to acknowledge but one mode of applying the forceps, for the last four positions,

and the one now under consideration, (815;) and his directions for all, are only applicable to the last. This position of the head must be rare; at least I have encountered it but once, and it was relieved by one blade of the forceps acting upon the vertex, so as to aid the efforts of the uterus, (which were very strong,) in bringing it towards the symphysis pubis.

830. When the forceps are resolved on, and the vertex of the child is to the left side of the pelvis, the female branch of the forceps must be placed behind the symphysis pubis, and the male blade before the sacrum. The handles of the instruments should be made to incline towards the left side of the mother, that the vertex may descend rather more than the forehead. When the vertex is on the opposite side, the male branch must be inserted behind the pubes, and the female branch before the sacrum; the handles, in this case, must be inclined to the right thigh of the mother, for the reason just stated.

CHAPTER XXII.

GENERAL REMARKS ON THE USE OF THE FORCEPS, WHEN THE HEAD IS ABOVE THE SUPERIOR STRAIT.

831. SMELLIE appears to be the first who had either sufficient skill or hardihood, to apply the forceps when the head was free above the superior strait, and since his time he has had but few followers.* This, however, has not arisen so much from the contemplation of its dangers, as the consciousness of its difficulties. To employ the forceps with success under such circumstances, it is necessary that the operator be aware of all he may have to encounter; as well as be skilled in their application, in the situations we have just considered; therefore, it cannot be recommended as a resource to inexperienced practitioners.

* Dr. Davis, (Elem. Oper. Mid.) appears to have used the forceps when the head was above the superior strait; and recommends it with every apparent confidence, in several cases where immediate delivery may be necessary. This, however, neither diminishes the difficulty, nor lessens the danger of these instruments, when awkwardly used. In his hands, the forceps may relieve the head from any situation in which it may be placed; but it must be recollected that few can boast of his experience or adroitness.

832. Baudelocque's observations upon this subject are so just and so important, that I must recommend them to the serious consideration of every gentleman who may intend to pursue the practice of midwifery. Fortunately, the necessity of operating with the forceps, while the head is in this situation, seldom occurs; especially in this country, where almost the only apology for their use, namely, a narrow pelvis, is of but very rare occurrence. I have been obliged to use them but five times in this situation of the head, in more than forty years;* my experience, of course, in this necessity, is very limited. On this account, especially, I refer to the high authority just mentioned, and forbear to give directions for their use. I believe that the frequent mention of difficult, dangerous, and rare operations, leads oftentimes to the unnecessary performance of them; not always so much from the necessity of the case, as the éclat which attends them, however unsuccessful. In surgery, I have known it to happen more than once; and once certainly, in midwifery.

833. When necessity obliges us to deliver when the head is situated at the superior strait, it is much better to have recourse to the doubtful but safer alternative of turning—for it will rarely happen that this cannot be performed while the head remains free above the superior strait, even where the pelvis may be a little contracted, with at least as much safety to the child, and certainly more to the mother.† I should, therefore, earnestly recommend to every unskilled practitioner, not to attempt this difficult, nay, in such hands, dangerous operation. Even Smellie‡ himself, the original projector of the use of the forceps at the superior strait, deprecates their employment at this part of the pel-

* It is a little remarkable, that I was under the necessity lately, of using the forceps twice within ten days of each other, when the head was at the superior strait.

† Dr. Davis proposes to deliver from the superior strait, under circumstances not recognised by any other practitioner. He observes, "In profuse uterine hemorrhage, for instance; the orifice of the uterus being supposed to be amply dilated, but the head of the child still at the brim of the pelvis, this method of treatment might sometimes very well deserve consideration, in comparison with delivery by turning."—*Elem. Oper. Mid.* p. 233.

I have already noticed this opinion of Dr. Davis, elicited by other considerations of this subject, at par. 657. I there suggested, and now repeat, that the use of the forceps under such circumstances, must be uncertain, if not dangerous; and I must again declare, I think turning to be the proper operation, if necessary to have recourse to any.

‡ Treatise Vol. I. p. 221.

vis: he says, "a long pair of forceps may take such firm hold, that, with great force, and the strong purchase, the head may be delivered, (from the superior strait,) but such violence is commonly fatal to the woman, by causing such an inflammation, and perhaps laceration of the parts, as is attended with mortification. "In order," continues he, "to disable young practitioners from running such risks, and to free myself from the temptation of using too great force, I have always used and recommended the forceps so short in the handles that they cannot be used with such violence as will endanger the woman's life." From this it would appear, that even in the hands of one of the most expert accoucheurs that ever lived, there was much danger attending delivery by the forceps, while the head remained at the superior strait.

CHAPTER XXIII.

OF THE LOCKED OR IMPACTED HEAD.

834. When the head has advanced some distance into the pelvis, and cannot proceed farther, and when it is immoveable, except upward in the pelvic cavity, it is then said to be locked or impacted. Baudelocque's account of this situation of the head, is by far the most lucid I have met with; he most successfully combats the opinions of Levret and Rœderer upon the mechanism of this arrest of the head, and completely establishes his own doctrines upon this point. I have so rarely met with this situation of the head, that I feel almost altogether indebted to him for what I know upon the subject; I shall therefore adopt his account of this embarrassing case.*

835. He admits but one general species of locking, and that is where the head is fixed by two points of its surface diametrically opposite to each other; this species he divides into two varieties; 1st, where the head is jammed with its greatest length between the pubes and sacrum; and, 2d., where its thickness cannot pass, owing to a narrowness of the pelvis: in the first case, it is the

* Madame Le Chapelle, Velpeau informs us, has never met with a case of locked head.

forehead and occiput which are in contact with the inner edge of the pelvis; and in the second, it is the parietal protuberances —this latter is the most rare.

836. Whenever the head becomes locked, it acquires the form of a wedge; Lamotte finely illustrates it, by comparing it to the keystone of an arch.

Sect. I.—*Of the Causes, Signs, and Accidents of the Locked Head.*

837. Several causes must concur to produce the locked head; 1st, the long-continued and vehement action of the uterus, and the auxiliary powers of labour—therefore, this fixedness of the head never need be feared in a delicate woman, agreeably to Baudelocque; 2dly, a disproportion between the pelvis and the head; this disproportion may depend upon the mal-situation of the head, upon its great size and solidity, or upon the deformity of the pelvis.

838. The immobility of the head is the pathognomonic sign of its being locked; but after it has become fixed, other symptoms arise, which, if they do not characterize this situation, are sure to accompany it—such as swelling of the hairy scalp of the child, a thickening of the os uteri, an intumescence of the vagina, and external parts. These symptoms do not always declare a locked head, but a locked head is never without them. When the pelvis is so small that the head cannot engage in it, certain symptoms take place, which, agreeably to Lamotte and Rœderer, are sometimes mistaken for the signs of the locked head.

839. A locked head is always serious to both mother and child: the mother it exposes to inflammation, sloughing, or gangrene; and the child to almost certain death.

840. The whole of the soft parts of the mother become injured, by the long-continued and violent pressure which the child's head exerts upon them; the vagina, rectum, and urethra, sometimes receive irreparable injury. The bladder also suffers from the accumulation of the urine, nor can it be relieved by the catheter, as the canal of the urethra is entirely obliterated.

Sect. II.—*Indications in the Locked Head.*

841. The principal indication in the locked head, is the delivery of the child. This is to be effected by the forceps, in pre-

ference to any other means, so long as the child is living; if its death be certain, the crotchet undoubtedly merits the preference. If we consult the older writers upon this subject, we shall find they all had recourse to the crotchet upon such occasions; and I am sorry to add, that too many living authors, as well as practitioners, are too fond of recommending or following their example. For, though the forceps do not always ensure safety to the child, they give it at least the best possible chance; they should, therefore, always be preferred. In this country, this terrible case is certainly very rare; this is owing principally to the healthy construction of the pelves of our females. When it takes place, it almost always arises from the bad positions of the head, and these positions must be either the third or sixth—now, these, as has already been observed, are of extremely rare occurrence.

842. I especially recommend the reader to consult Baudelocque's very useful chapter upon this subject; he will find much excellent practical matter, besides the histories of several very interesting cases, which are of much more importance, particularly to the professed accoucheur.

843. The locked head is sometimes confounded with a head merely arrested in its progress; the stoppage may arise from, 1st. Whenever the head maintains its diagonal or transverse position at the lower strait; 2d. When the chin departs from the breast too early in the labour; 3d. When the lower strait is less than the ordinary size; 4th. When the external and internal parts make much resistance.

844. For the removal of the first cause, we must bring the vertex towards the arch of the pubes; by one blade of the forceps or by a lever: this is not very difficult to perform; I have succeeded in altering this position of the head by applying the extremity of the instrument upon the vertex, by passing it at the bottom and side of the pelvis, until it has passed under the head; we must then raise the edge of the blade, and insinuate it between the side of the pelvis and the vertex; then, if the handle be pressed against the perinæum, its curve will be placed upon, or near the posterior fontanelle. When thus fixed, we must draw the instrument downward and forward during a pain, until we can move the vertex to its proper situation. When the head is thus changed, we may withdraw the vectis, and commit the rest to nature.

845. The mode of treating the second case has already been explained, (702, &c.) when speaking of this perverse situation of

the head. When the arrest is owing to the smallness of the lower strait, as in the third, (843,) the head must be extracted by the forceps, unless the defect be excessive; and if excessive and the child dead, the crotchet must be used; but if living, Baudelocque proposes the Cæsarian operation. If the external and internal parts, as in the fourth case, (843,) offer the resistance, blood-letting will be the remedy.

Sect. III.—*Method of Using the Forceps in the Locked Head.*

846. When the head is locked by its greatest diameter becoming wedged in the small diameter of the superior strait, it is either by the vertex or the forehead being towards the pubes. In using the forceps for either of these situations, we must conduct them so that they shall apply themselves over the ears of the child, or to the sides of the head. They must be so arranged, that the concave edges must be towards the part which will eventually come under the arch of the pubes. When the head is embraced, we must endeavour to raise it up by a compound motion of the forceps; that is, by carrying the handles gently from side to side of the pelvis, and at the same time pushing the instruments upwards, so as to raise it from its bed. When this is done the vertex or forehead must be turned towards the left side of the pelvis, if practicable; and when there, the motion we have already described must be given to the handles of the instruments, until either the vertex or forehead, as the case may be, is brought under the arch of the pubes. Baudelocque directs the head to be turned as it is brought along, but I do not think this necessary; for when the head arrives at the inclined plane, formed by the sacro-ischiatic ligaments, it will turn towards the opening of the pelvis spontaneously. It must be recollected, in order that the instruments should be carried to such a height in the pelvis, that the handles must be kept well pressed against the perinæum.

847. When the head is locked by the small diameter becoming jammed in the small diameter of the superior strait, the vertex must answer to either the right or the left side of the pelvis, and the concave part of the instruments must look towards it; consequently, there will be a choice of blade to be first introduced—if the vertex be to the left side, the male blade must be first, and the reverse. The head must be raised from out of the superior strait by the hand, and then the instruments must be directed

over the sides of the head, and the traction must be in conformity with the axis of the upper strait; this direction is given by pressing the handles against the perinæum.

CHAPTER XXIV.

OF THE USE OF THE FORCEPS IN FACE PRESENTATIONS.

848. In considering face presentations, I was inclined to restrict their number to two, instead of four, as described by Baudelocque—if I should not be correct in this reduction, I am at least sure, that the first and second of my arrangement, are by far the most frequent, and can safely say, I have never met with the third and fourth, though they were recognised by both Smellie and Baudelocque. Indeed, the presentation of the face in any position is of very rare occurrence; I find I have met with it but ten times in more than ten thousand cases;* and upon consulting the table furnished by "l'Hospice de la Maternité de Paris," I find, that of 12,751 women delivered in that institution, there were but forty face presentations; and of that forty, but one of the first presentation of Baudelocque, and not one of the second; whereas, of the third, there were twenty-two, and seventeen of my second. This is strong confirmation of the infrequency of the first and second positions of Baudelocque.

849. When a labour in which the face presents becomes complicated by any of the before enumerated causes, (651;) or if it is rendered impracticable without the application of adventitious aid, from mere position; and that aid consist in the proper application of the hand, and it prove insufficient for its accomplishment, we must resort to instrumental delivery—this will comprehend the use of the vectis, the application of the forceps, or the employment of the crotchet.

850. Of the mode of using the vectis I have already spoken;†

* It is a little remarkable, that lately I met with two cases of face presentation within a week of each other, and a third within three months of these two; making nearly half the number, I have ever encountered.

† Baudelocque's method of using the lever in this case, (System, Vol. III. par. 1836,) appears to me to be defective, as I have already stated. I have, in a few instances, used as described before with the most decided advantage—but how far it may be successful as a general practice, I have yet to learn; for I again de-

the forceps I consider of doubtful efficacy, not so much from the difficulty of application, as their mode of action in these particular cases; though it would seem, Smellie had succeeded with them. I would, however, wish to be understood, in speaking of the use of these instruments, that I confine my observations entirely to the first two presentations of the present arrangement,* or where the head is situated transversely in the pelvis. In such situations of the face, we are told, by both Smellie and Baudelocque, that "we must use the forceps;" the latter declaring, that "when we cannot rectify the relation of the face to the pelvis by the plan already advised, or without great danger to the mother, because the head is strongly wedged, and the uterus contracted and closed upon the child,"—"we must use the forceps to bring the head along in the attitude we find it in," because fewer inconveniences result from it to mother and child than from any other method.

851. Should the forceps be determined on, we must apply them over the ears; that is, one blade behind the pubes, and the other before the sacrum; they must be so applied that the concave edges must look towards the hind head, which must be brought under the arch of the pubes, and not the chin, as directed by Smellie.

852. Should all the reasons exist for using the forceps, and their application not prove successful, I feel that this is one of the very few cases where the application of the crotchet is justifiable for the preservation of the mother, however repugnant I may be to its use, or however revolting it may be in its consequences.

853. Having considered all the most frequent and better known presentations of the head, with the various modes of conducting

clare, my experience in face cases to be very limited; but it appears to me to be more consonant with the principle to be acted upon in such cases; which is to reduce the vertex, and elevate the chin. But agreeably to him we must act forcibly upon the vertex, that it may "be sufficiently brought down;" but we cannot bring the vertex down alone by his plan, as the face will descend with it by obeying the same impulse which moved the vertex. Now, this disadvantage is avoided by the plan I propose; namely, after fixing the vectis properly upon the occiput, we apply no more force to it than is sufficient to prevent it from rising in the pelvis, at the time we are acting on the face, by applying two fingers immediately at the extremity of the nose, and upon the upper jaw.

* The third and fourth are so rare, or rather their possibility so doubtful, that I do not think it worth while to notice them farther than I have already done—those desirous of seeing all that can be said upon these positions, are referred to Smellie and Baudelocque.

them when nature is sufficient to their accomplishment; the mode of operating by the hand alone when she is incompetent to this end, and the use of instruments when it becomes essential from this cause to employ them; I shall not consume the reader's time or patience by describing a variety of other presentations of this part as laid down by authors; first, because I never have seen them; and, secondly, because I believe if they really exist, they must all, or with very few exceptions, be treated by turning: as I shall direct for many other rare and perverse positions which the child's body *may* assume at the orifice of the uterus.

854. Nor shall I spend time in describing the form of the vectis, or its mode of application; because the one would be totally unnecessary without the other; and I decline the latter, because I am not in the habit of using this instrument, except in rectifying bad positions of the head; and for this purpose I have always found one of the blades of the forceps sufficient. I consider the vectis inferior to the forceps, in power, safety, and convenience: and I am truly glad to perceive the change which has taken place in the public mind, since the accurate and elaborate analysis of its merits, by the judicious Baudelocque, has been before the public.

855. I am also pleased to find a change in Mr. Burns'* opinion upon the subject of the vectis: he says that "a young practitioner shall be less apt to injure his patient, and less likely to be foiled, with the forceps than the vectis;" and particularly gratified that Dr. James, in a note to this paragraph, expresses the same belief. The latter gentleman's opinion, upon this and every other point connected with our subject, is highly valuable; especially in this country, where the opportunities to test the respective merits of these instruments can fall to the lot of no one who is not extensively, and for a long period, engaged in obstetrics; for the facility of labours among our females, owing to the almost entire exemption from rickets, and other causes which render this process one of much more difficulty in Europe, give comparatively few opportunities to decide upon their respective claims.

856. I have for many years felt the superiority of the forceps over the vectis; but was reluctant publicly to express it, from an apprehension that I might have mistaken my own mal-adroitness in using the latter, for an imperfection in the instrument itself; but strengthened by the opinion of Dr. James, I have no longer any hesitation upon this subject.

* Principles, James' ed. 1823, Vol. I p. 447.

CHAPTER XXV.

PRESENTATIONS OF THE BREECH.*

857. The presentation next in frequency is that of the breech, though not so arranged by Baudelocque; but as I before stated, I think it a good rule, to treat of labours in the order of their frequency. The breech may with great propriety be considered as a variety of natural labour; since the woman most frequently is able to relieve herself, if we except, perhaps, a first child; though the process may be longer, and more painful, than when the vertex presents in one of its best manners. And, were I to institute a comparison between the two, I should say it is not ordinarily more painful than the fourth or fifth vertex presentation. I think also that this presentation is more favourable for the child, than either the feet or knees; especially in first labours; though the operation, generally speaking, is slower; and, perhaps, more fatiguing to the mother.

858. The risk, in all the labours, whether natural or artificial, in which the child's body is first delivered, arises from the delay in the delivery of the head, and the compression of the umbilical cord. Now, the latter very frequently depends upon the former; and the former upon the bad position of the head as regards the pelvis: or from the rigidity of the external parts. This being the case, it is evident, that the risk from the delay of the head at the inferior strait in consequence of the want of dilatation of the external parts, must be less in presentations of the breech, than in the presentations of the feet and knees; because, its bulk being nearly equal to that of the head, will by passing through those parts so effectually dilate them, as very much to diminish the risk of such delay. On this account, I think breech labours, cæteris paribus, safer to the child than those of the feet or knees, though they are not generally so considered.†

* Of 20,517 births, 373 presented the breech. Of these, 217 were of the 1st presentation;—140 of the 2d;—6 of the 3d;—10 of the 4th. We think it probable there is an error in this, as it happens, oftener (agreeably to this account) than the third; an occurrence we very much doubt.

† Baudelocque‡ says, that "delivery may be generally performed as naturally when the child presents the breech, as when it offers the feet or knees; only that, cæteris paribus, it will be a little longer, and more difficult; because the child

‡ System, Vol. I. par. 766.

859. The presence of the breech at the orifice of the uterus, cannot be very well ascertained or distinguished, before the membranes are ruptured and the uterus pretty well dilated. Under proper circumstances it may be known, by its forming a large softish tumour in the pelvis, which wants the characters of the head, with which it is alone liable to be confounded; for it has neither the sutures, nor the hardness of this part; nor the roughness of the hairy scalp. A deep groove is observed in the centre of this part, which, when traced, leads to the detection of the anus, and the parts of generation. A discharge of meconium, after the membranes have given way, tends to corroborate, but does not absolutely confirm the presence of the breech.*

It must, however, be confessed, that there is sometimes a great deal of difficulty in deciding whether the presentation be the head or the breech—the former, when very much swoln by becoming locked, may resemble the breech; and the latter, when very tumid, may have its principal signs so masked, as to render it doubtful whether it be breech or head. Baudelocque† tells us of an experienced practitioner, who mistook the breech for a locked head, and delivered it with the forceps.‡ In all cases of ambiguity, I have constantly made it a practice to introduce the hand, to ascertain the nature of the presentation whenever it becomes important to decide the point.

Sect. I.—*Species of the Breech Presentations.*

860. There are four principal manners in which the breech may present at the upper part of the pelvis; *a*, the first is where

does not then form so regular and lengthened a wedge, as when the lower extremities are unfolded." I agree, that it may be "a little longer and more difficult" to the mother; but, for the reasons above stated, I think it safer for the child.

* It is Levret, I think, who mentions a case in which there was a considerable discharge of meconium, though the head presented; and I am certain of having met with one case, if not more, of a similar kind.

† System, Vol. I. par. 1251.

‡ Dr. Blundell is rather an advocate in his Lectures for this mode of treating breech presentation. He says, "There is yet another mode in which you may assist the descent of the breech; and which, I think, worth your knowing, though I do not recommend it to general practice;—and this is, by the use of the forceps. Nor am I deterred from the forceps by the alarms of Capuron, who asserts, the use of the forceps in this case to be toujours dangereux si non me eurtrier pour l'énfant." He thinks you may bruise the sides of the viscera of the abdomen by the application of the forceps to the breech; and so you may, if you use force; but force, I have told you, is to be exploded from midwifery. If you lay hold of the hips with the forceps, you may grasp with readiness.

the lower part of the spine and sacrum offers to the left acetabulum, while its abdomen looks towards the right sacro-iliac symphysis; *b*, 2nd., where the back part of the child answers to the right acetabulum, and the belly to the left sacro-iliac junction; *c*, 3d., where the spine and sacrum are behind the symphysis pubis, and the belly towards the projection of the sacrum; *d*, 4th., the reverse of this.

Sect. II.—*a. Mechanism of the First Presentation of the Breech.*

861. In this presentation the oblique situation of the breech at the upper strait, is soon changed by the contraction of the uterus into one almost strictly transversal; so that the spine will at one time be found behind the symphysis pubis; but soon after, the left hip or spine of the ilium will be made to offer itself under the arch of these bones, while the right will be resting upon a part of the sacrum, and the inclined plane formed by the left sacro-ischiatic ligaments. The spine of the child will rest against the left leg of the pubes, and the hip which is under the arch will rise upwards, while the right will turn into the hollow of the sacrum, and travel successively over the point of the coccyx and the face of the perinæum, to offer itself at the bottom of the vulva, that it may escape through the external parts; which presently it does, with the other portions of the breech, by rising by a slight bend of the spine towards the mons veneris.

862. When the breech has passed a sufficient distance through the os externum, the legs of the child fall down, and the remaining portion of the body, by the successive contractions of the uterus, will be delivered by passing a little obliquely through the external opening of the pelvis. When the armpits descend to the superior strait, there is a momentary interruption to the farther descent of the body of the child, occasioned by the size of the shoulders, and position of the arms; but from the pliant disposition of these parts, it is but temporary; for they are made to accommodate themselves to the shape of the pelvis, by the repeated contraction of the uterus. The head now offers itself to the upper opening of the pelvis, the occiput is behind the left acetabulum, and the face before the right sacro-iliac junction. The chin will descend sooner than the occiput, in consequence of its having been placed against the breast of the child.

863. As soon as the head clears the superior strait, the forehead inclines towards the hollow of the sacrum, by the same pivot-like motion which it performs to place the vertex under the arch of the pubes, in vertex presentations. The nape of the neck will now be under the arch of the pubes, while the face will be lying on the face of the perinæum. The chin will first escape from the vulva: the other parts of the face, and anterior part of the head, will successively follow; while the nape of the neck will execute a slight circular motion under the arch of the pubes. The arms are liberated, so soon almost as the shoulders are pushed through the os externum.*

Sect. III.—*b. Mechanism of the Second Presentation of the Breech.*

864. In this presentation, the mechanism is precisely the same as that of the first: on the part of the child we must only substitute the right hip, offering at the arch of the pubes, for the left, as in the first presentation; and, at the last period of the labour, the vertex or occiput will be placed at the right side of the pelvis instead of the left. On the part of the pelvis, it is the right acetabulum, behind which the breech offers, &c.

Sect. IV.—*c. Mechanism of the Third Presentation of the Breech.*

865. In this presentation, the breech engages in the superior strait, with its greatest width parallel to its large or transverse diameter—the spine passes immediately behind the symphysis pubis; and it becomes a matter of some uncertainty, which hip will offer under it; but whichever it may be, it passes through a little obliquely, as in the other presentations. Though in this position the face of the child looks directly to the projection of the sacrum, it seldom happens that the head becomes jammed with its greatest diameter, in the small diameter of the superior strait; it is, therefore, almost always, found to place itself diagonally, and pass down in that direction, as in the two former presentations.

866. When the breech becomes free, the labour proceeds

* It must be borne in mind, that a strictly natural delivery is here described—or, in other words, where no adventitious aid is required.

commonly as has been described in the first or second positions, as it may be the left or the right hip which offers to the arch of the pubes.

Sect. V.—*d. Mechanism of the Fourth Presentation of the Breech.*

867. The only difference in the mechanism of the third and fourth of these presentations, is, that instead of the face being placed below, as in the third, it is found to be looking up, which creates the only peculiar difficulty in this case. The risk of the head engaging with its greatest length in the smaller diameter of the superior strait, is perhaps greater in this than in the third —but should this take place in either, difficulty might be created. The fourth presentation is decidedly a rare one—I have met with it but once; and upon examining the returns from "l'Hospice de la Maternité," but one case is recorded in more than 12,000. When it occurs, and we have not lost the opportunity, we should always seek for the feet, and deliver by them.

868. I have already observed, that all the presentations of the breech are attended with slower, and more painful labours; and that the child very frequently suffers. This is especially the case where the labour has been improperly interfered with, either by rupturing the membranes unseasonably, or under the influence of false principles, seeking the feet, and causing the child to pass rapidly through the external parts, before they are properly relaxed; in consequence of this, the head becomes wedged in the inferior strait. Then, under the direction of the same erroneous views, it is attempted to deliver it quickly, by making force supply the place of address; and the child becomes the victim of this unnecessary and ill-directed violence.

869. It must constantly be recollected, in all cases in which the head is the last part to be delivered, that when it offers itself to the os externum, it is entirely from under the *direct* control of uterine action; the auxiliary, and voluntary powers alone have an influence on it at this period of labour; and though external force may, and almost always does become necessary to terminate the labour, it must always be made to co-operate with these powers, by soliciting the woman to exert them as amply as may be in her power.

CHAPTER XXVI.

CAUSES WHICH MAY RENDER PRESENTATIONS OF THE BREECH PRETERNATURAL.

870. The presentation of the breech, like any other presentation, may be complicated by either of the accidents enumerated in par. 651, and must, when thus complicated, be interfered with, whenever such a combination may render the labour difficult or dangerous.

871. Besides the causes just alluded to, there may be others connected with the child itself, which should cause us to aid in the delivery of the woman. But in the absence of such causes, and especially in a first labour, the process should be left to the powers of nature alone; or at least, until the breech is delivered.

872. I am aware that many respectable practitioners are in the habit of introducing the hand and bringing down the feet, in all cases of breech presentation; but I am abundantly convinced, that as a general rule, it saves the *mother* nothing, and that it is highly dangerous to the *child*.* I am of opinion that this practice is often the result of the classification of labours, as breech presentations are almost uniformly placed in the preternatural class; it has, therefore, been too easily supposed that such cases always require extrinsic aid. May not this be one of the reasons why so many children perish in this presentation? What the general practice in breech presentations may be in Great Britain, I am not prepared to say; but the result is extremely unfavourable; since Dr. Denman says, "I have considered one child in three of those born with these presentations, to be still-born." This proportion by no means coincides with my experience in such cases; the average of living children would be considerably

* Dr. Blundell relates the following instructive anecdote.—"Dr. Lamcler was called to see a woman labouring under the presentation of the nates; the labour being difficult, because the breech was large, and the pelvis small. The action of the womb being powerful, however, the breech was pushed to the outlet of the pelvis, and the accoucheur laying hold of the hips, assisted a little with his characteristic gentleness, but suffered the legs to drop of themselves. To this case a midwife had been called—and after the doctor had brought away the child, she went up to it and examined the thighs, and turning round with surprise, exclaimed, 'Why, you have not broken the thighs?' 'No,' said the doctor, 'why should I break the child's thighs?' 'Why,' said she, 'I always break the thighs.'"—*Prin. and Prac. of Obstet. p.* 202.

greater, though a number of my cases were second hand, and in which the first stages of labour had been very often ill-conducted; I, nevertheless, think Portal's proportion rather too little for France, where there must necessarily be very many faulty pelves to contend with, as he makes but twenty per cent., while Dr. Denman's is thirty-three—in this country, where we but very rarely meet with a deformity of pelvis; when there is not an excess of size in the breech; and when the earlier stages of labour have not been disturbed, by ill-timed officiousness, or an entire ignorance of the correct rationale of such cases, I am, I think, warranted in saying, that the number of still-born children from breech presentations, might be reduced to very few. But the result of cases in which the breech, the knees, or the feet present, agreeably to the records of "*la Maternité*," is, that one child in eight perishes, which is again very much less than the proportions established by Denman and Portal, and can, perhaps, only be satisfactorily accounted for, by supposing that in that institution a better treatment is established for these cases. Yet we confess, on the other hand, that the proportion of still-born children in the same hospital, to those born alive is, judging by my own experience, excessive; namely, one in thirty-two. In this country, under favourable management, we do not think there is one in fifty, if we select, as we think we should, only such cases in which children die in the birth, and this we presume is the mode of calculation in Paris, as the comparison is instituted between the head, breech, feet, and knees, cases. This disparity induced M. Baudelocque, nephew to the celebrated accoucheur, to inquire into the cause, which he declares to be always the same; namely, to the interruption of circulation between the mother and child, which constantly produces *a sanguineous congestion, either in the brain or in the liver*, and thus adopting the opinions of Chausier, Madame Lachapelle and Dugès.

He does not agree with his uncle, that the stretching of the vertebral column is a frequent cause (736) of death, in other than head presentations, and strengthens the general position, by the testimony of Mdme. Lachapelle, who declares she has seen children born alive, when so much force had been applied as to cause a cracking noise from the tearing of the ligament, of the cervical ligaments. But let us not be deceived upon this point, and be disposed to believe, that the severe stretching of the cervical vertebræ is free from danger to the child; on the contrary,

we are certain, that if it be severe, it is always fatal to the child, though it may not be the only cause of its death.

873. But should any one of the accidents which may disturb a labour assail a woman whose child is presenting the breech, we are justified in giving such assistance as the exigency of the case may demand. The kind of aid we are to give will depend upon, 1st. *a*. The degree of advancement, or the part of the pelvis at which the breech may be at the time; 2d. *b*. The position of the child; and 3d. *c*. The size of the breech.

a. First Degree of Advancement.

874. An accident threatening or endangering the life of the mother, may, *a*, attack her at the very commencement of labour, and where the child is still at the superior strait; *b*, it may attack, when the breech is pretty low in the pelvis, but still included by the uterus; *c*, it may attack when the breech is at the lower strait, but escaped from the uterus.

875. *a*. This may happen when the uterus is well dilated, or easily dilatable, or when rigid; the membranes may be either entire or just ruptured, or ruptured a long time.

876. Should any circumstance render it necessary to deliver the woman when labour is but little advanced; the breech at the superior strait, or near it; the uterus dilated or dilatable; the membranes entire or just ruptured: we must without hesitation introduce the hand and bring down the feet, and finish the delivery as directed, when turning is employed for a vertex presentation. But should the uterus be still shut, or but little opened and rigid, nothing should tempt us to enter the uterus forcibly, with a view to bring down the feet and deliver; especially, if the membranes are entire; as, under such circumstances, there must be a reasonable expectation that the uterus will soon dilate, at least sufficiently to pass the hand without violence. As I have constantly inculcated the impropriety of dilating the uterus by force, whenever the labour is complicated by any supervening accident, I must be understood to make no exception here in favour of this presentation; therefore, when the uterus is rigid, and but little opened, we must treat the case by temporizing, agreeably to the nature of the accident, until either the remedies, or the influence of the accident, or the powers of the uterus itself shall make such change as will render the attempt at bringing down the feet proper and safe.

b. Second Degree of Advancement.

877. *b.* It may attack when the breech is pretty low in the pelvis, but still included in the uterus: this may happen when the uterus is well dilated or easily dilatable, or when rigid and unyielding; and when the membranes are entire or just ruptured; or when the waters have been drained off a long time, and the uterus is firmly embracing the body of the child.

878. In the first instance, or where the uterus is in a condition to transmit the hand without much force, the membranes entire, or the waters but lately passed off, we should bring down the feet as directed in the former instance, and finish the labour after the same manner. But should the os uteri be rigid, whether the membranes be entire or not, we must not force the mouth of the uterus, with a view to terminate the labour; but as just suggested, temporize, until the uterus will permit the hand to pass for this purpose, without difficulty; for it will rarely happen, even where the waters have long escaped, that we cannot pass the hand to the margin of the pelvis, and seize the feet, provided the proper hand be employed.

c. Third Degree of Advancement.

879. *c.* It may attack when the breech is at the lower strait, but passed through the mouth of the uterus. This situation necessarily presupposes the dilatation of the uterus, and almost certainly the escape of the waters. In this condition of the breech and uterus we must not attempt to bring down the feet, unless the breech be very small, or the pelvis very ample, and the woman without pains, or at least efficient ones: for if they are protrusive, and under the circumstances just mentioned, they will deliver the breech in good time, or in such time as will prevent any serious inconvenience from the delay. But should the breech be large, and occupy the lower strait very strictly, we should not attempt to finish the labour by bringing down the feet. In this case, we must assist the passage of the breech by acting, 1st, with the fingers; 2dly, by the fillet; 3dly, by the blunt hook or hooks.

880. When the breech is very low in the pelvis, or so low that we can place a finger into the groin, we may, by the forces so applied, aid the descent of the breech; especially if the uterus

by its contractions still powerfully co-operate with our exertions. Whenever attainable, we should prefer that groin which is most posterior to the arch of the pubes, when but one at a time can be operated on. If both groins can be reached, we may insinuate a finger of each hand into them, and have this double power to assist the breech to descend.

881. Should the force just directed be too feeble for the purpose, or too fatiguing to the operator, he may substitute the fillet with very great advantage. Baudelocque* makes a disparaging mention of this power: he says, "its application is so difficult, that it is with a sort of repugnance that he reckons it among the resources of art." That it is sometimes difficult in its application, I readily admit; but it is by no means impracticable, when the breech occupies the lower strait. If the passing of the fillet be attempted when the breech is pretty remote from the os externum, we may certainly be foiled; but this is not a case proper for this instrument; for it can only be used when the point of the finger can command the groin.

882. This fillet should consist of a piece of silk riband of an inch and a quarter or half wide, and at least two feet and a half long. When doubled, the point of the forefinger must be placed in the centre of the fold and kept tight upon it, by drawing it sufficiently with the other hand—the parts of the woman and the fillet should both be imbued with lard or sweet oil, and the riband then passed into the vagina by the point of the finger, and conducted over the hip, and into the groin towards the parts of generation of the child, as far as the point of the finger can reach; the finger is then to be retracted a little, that it may gather upon its point another fold or fillet, which it also carries forward as far as it can reach; and this to be repeated for several times, until the folds so multiply in the groin as to move each other forward, so as to appear at the other extremity of it—when there, it may be drawn down by the forefinger of the other hand, introduced, after the first is withdrawn from the vagina; or it may be hooked, as proposed by Baudelocque, and as I have myself practised, by a hook, made extemporaneously, of a piece of pretty stiff wire.

883. When the fold of the fillet is seized by the finger and thumb, or hooked by the instrument just mentioned, we are to take hold of one of the outer extremities of it with one hand,

* System, par. 1267.

while we draw the other end through the groin, by gaining successive portions of it. When the fillet is thus made single in the groin, we take hold of both extremities of the riband, and secure a good hold by passing it several times round some of the fingers. We then co-operate with the pains if there be any, by pulling in the direction of the axis of the lower strait, until the breech is relieved from the pelvis. But if the pains have ceased, we draw at intervals; at the same time, we solicit the co-operation of the patient.

884. But should we not be able to pass the fillet, because the breech is too remote from the finger, or because the breech is very large, and firmly impacted in the pelvis, we must then attempt assistance, by employing the blunt hook, or hooks. I have found, more than once, the hook at the extremities of the French forceps answer extremely well, as Baudelocque long since suggested. But that they may be employed with advantage, they must stand very nearly at right angles with their stems; for if they are too much depressed, they cannot be introduced into the groins; for this reason I would advise every gentleman who may adopt these instruments, to attend to this circumstance at the time he is purchasing them.

885. The mode of using the blunt hook, is by first placing the point of the forefinger upon the groove which leads to the groin: then pass the handle of the forcep into the vagina, with the point of the hook looking upward or towards the point of the inserted finger, until it comes in contact with it; then, by altering the position of the hook, and making it take the place of the finger, by a gentle pressure, it may be placed in the groin: when thus placed, we must aid the descent of the breech by pulling at the external extremity of the instrument in the direction of the axis of that part of the pelvis through which the breech is to pass.

886. Baudelocque proposes blunt hooks to join something like the forceps for this operation; but this I do not think necessary; for when both groins can be commanded, and it is essential from the nature of the difficulties attending the labour to act upon both of them at the same time, both handles of the forceps, I am of opinion, may be employed advantageously, without being united—but I confess this to be conjecture; for I have had no experience of it.

887. When the breech is situated obliquely at the lower strait, we should apply the force, whenever practicable, to the groin

which offers to the sacro-iliac symphysis, or side of the sacrum; as this hip should advance faster than the other, that it may arrive at the bottom of the vulva to escape through the os externum. When placed transversely, we may act upon either, or both groins, until the breech is about to pass under the arch of the pubes—when there, we should endeavour to depress one of the groins, that the ilium may come under the arch, instead of the sacrum and spine, unless it does so spontaneously.

Sect. I.—1. *Position of the Child.*

888. The child may present so untowardly at the superior strait, in consequence of a severe obliquity of the uterus, as to be unable to engage in it. In such case, one of the hips may only present itself to the opening of the pelvis; of course the labour, if not rectified by changing the position of the woman, will be very tedious and painful, or even dangerous. This situation of the hip will, of itself, offer great embarrassment to the woman delivering herself; and often render it proper that we interfere without delay; but when this position is attended with either of the accidents heretofore enumerated, it becomes indispensable that we bring down the feet; provided the conditions on the part of the uterus just mentioned, do not render that operation improper.

889. Should the breech present in the fourth position, and this be ascertained immediately after the rupture of the membranes, it would, I believe, always be best to bring down the feet; provided the uterus be sufficiently relaxed to permit the hand to pass without difficulty; but should this presentation be complicated by any accident, it will become absolutely necessary; but it must be under the provisions just stated.

Sect. II.—2. *Size of the Breech.*

890. The breech may be absolutely, or relatively large as regards the pelvis: in either case, the same difficulties will be experienced. If the labour be left to itself, it may consume so much of the woman's strength as to render her situation precarious, unless recourse be had to adventitious aid. This case may be complicated by any of the accidents already enumerated; or its difficulties may be increased, by being a fourth presentation.

891. When sufficient time has been given, without advantage to the labour, and the cause of the delay satisfactorily ascertained, we should interpose and save the patient much unavailing pain. The nature of the assistance to be given must depend, 1st, upon the condition of the uterus, and the degree of advancement of the breech; and 2dly, whether it be still contained, or has escaped, from the mouth of the uterus. In the first case we must bring down the feet so soon as the uterus will permit; and in the second, also, provided the breech is still within the uterus, and the waters but recently drained off; but if it has escaped from the orifice of the uterus, we must employ the fingers, the fillet, or the blunt hook, as may appear expedient.

Sect. III—*The Mode of bringing down the Feet, in the First Presentation of the Breech.*

892. The success of this operation very much depends upon the choice of the hand to be employed. The rule on this subject is extremely simple—the hand, the palm of which will answer to the anterior parts of the child, is always to be used. In this presentation, then, the left hand will be the proper one for bringing down the feet. It must be introduced with due attention to the rules already laid down, when speaking of turning, and passed upwards before the right sacro-iliac symphysis, until it can grasp the breech—which must be raised, and carried into the left iliac fosse. We must then search for the feet, by tracing the posterior part of the thighs and legs, until we arrive at them; they must be seized as before directed, and brought down.

893. If but one foot can be obtained, we may attempt the delivery, by acting upon it alone; but when practicable, it is best to search for the other, unless it will require too much force. It will rarely happen, if the breech be small, that much difficulty will be experienced in doing this; but this is precisely the case in which we can almost always succeed, by applying the force to one. When delivering by one foot only, we should be very mindful of the direction in which we act upon it—we should always direct our force so as to carry the leg towards the retained one, lest we fracture or dislocate the thigh; and, when the folded leg begins to appear, we may assist it by acting with a finger on the groin. When the breech is without, we must conduct the body along, until the other leg and foot fall down of themselves.

894. When the breech is still within the uterus, and occupies the lower strait, we can very often, should the necessity of the case require it, gain the feet, and enable us to expedite the labour; provided the waters have not been too long drained off; the pains feeble; and if the breech is not of an unusual size. But if the breech has passed the os uteri, we must not think of this expedient—when thus situated, the fingers, the fillet, or the blunt hook, must be our aids.

Sect. IV.—*The Mode in the Second Presentation of the Breech.*

895. A proper choice of the hand must be made in this presentation, as well as in the preceding—when the emergency of the case requires bringing the feet down, we must make use of the right hand instead of the left, and conduct the rest of the operation in every respect as just directed. If but one foot can be obtained, we must proceed with it to finish the labour; but always recollecting the conditions which would render this partial action safe and proper. (893) Should the breech, however, have escaped from the mouth of the uterus, it would be highly improper to pass up the hand with a view to bring down the feet —the aids just indicated (879) must then be resorted to.

Sect. V.—*The Mode in the Third Presentation of the Breech.*

896. The spine of the child, in this presentation, is to the symphysis pubis, and the abdomen to the projection of the sacrum—this position is less favourable than the first and second, owing to the risk of having the head to engage with its greatest length parallel to the small diameter of the superior strait: this, however, is not a necessary consequence of this presentation, as we have already observed.

897. In this presentation, either hand may be used. When required to act, the hand must take a firm hold of the breech, as directed for the raising of the head, and carry it forward and upward, over the pubes, and then pass the hand along the legs, until the feet can be reached: they must now be brought down, as heretofore directed; only observing, when the feet are entirely without, to turn the breech so as to make the body have an oblique position as regards the pelvis.

Sect. VI.—*The Mode in the Fourth Presentation of the Breech.*

898. I have already remarked how very rare this presentation is; but when it does occur, there can be no doubt of the propriety, if called to the case in proper time, of always searching for the feet. In this presentation, either hand may be used, as mentioned for the third; only observing, that the breech, in this case, if possible, must be carried to one of the iliac fossæ; to the right, if we use the right hand, and the reverse, that the body may enter the superior strait obliquely, so as to give the chance to the face to turn from the pubes—after this, we search for the feet, and bring them down as directed. When the breech is without, we must attempt to give an oblique position to the body, if it has not already acquired it. It does not necessarily follow, however, that this case will be attended with more difficulty than those just spoken of; as the child may be very small, or the pelvis very ample. In either instance the woman would be enabled to deliver herself.

899. It may be proper to observe, that all breech cases are to be subject to the rules I have endeavoured to inculcate for the safety of the uterus: 1st. That no severity of accident can justify forcing a passage into the uterus, with an intention of gaining the feet when the os uteri is unyielding. 2d. That when the breech is very large, the waters long drained off, the uterus firmly contracted on the body of the child, and much force would be required, (whatever address the accoucheur may possess,) the feet must not be sought for; but the labour must be terminated by the other agents already indicated. (879) 3d. But when the uterus is in proper condition, and the membranes just ruptured, or the contractions not severe, though the waters may have escaped some time, we should lose no time by temporizing, when the accident is of a nature to render interference important to mother and child.

CHAPTER XXVII.

THE USE OF THE FORCEPS WHEN THE BODY OF THE CHILD IS DELIVERED, AND THE HEAD RETAINED.

900. The risk the child always runs when its body is delivered first, is so great, as to make us look upon such labours as hazardous, whether the necessity for this consideration be naturally or artificially created. I have already adverted to this; but it may still be useful to repeat, that the danger to the child arises, 1st. From the severe extension to which the cervical vertebræ may be liable, when it is necessary to employ force for the deliverance of the head; 2d. The almost inevitable compression of the cord, if the head be large, either positively or relatively, as it will be caught almost necessarily between the head and pelvis, or if it be tightly stretched, by its passing between the legs of the child, and we are unable to relieve it, &c. These causes pretty constantly operate, where the head is the last part to be delivered, unless the pelvis be very ample, or the head small, and the external parts disposed to yield readily, and the mechanism of this part of the labour well understood. The mode, by which the remote causes just enumerated effect the death of the child is not so clearly understood at this moment as it should be, considering its importance; and this seems to be admitted on all hands, and will, we trust, elicit farther inquiry. MM. Baudelocque (nephew to the celebrated accoucheur) and Hervey de Chegoin, have offered some valuable observations, in "A Report on two new propositions by M. Baudelocque, junior, for preserving the life of the fœtus when it presents the breech, feet, or knees; made to the Royal Academy of Medicine by M. Hervey de Chegoin."

We think these observations so deserving of being more generally known, that we attach them to our text. And we farther think, that their value is increased, by the observations of Dr. Hodge of our city, who has prepared the paper for the "American Journal of Medical Sciences for February, 1833, page 463.

"It being generally acknowledged, that the child during parturition is much more endangered when it presents the *pelvic* than the *cephalic* extremity of the fœtal ellipse, the question as to the nature and cause of this difference is of importance. M. Baude-

locque, jr., in a late communication to the Royal Academy of Medicine, maintains that the cause of death in pelvic presentations is *always the same*, namely, the interruption of the circulation from the mother to the child; and that the effects of this interruption are *always* the same, namely, a sanguineous congestion in the brain and liver, with or without effusion at the base of the brain. He considers, therefore, the asphyxia and the apoplexy of new-born infants, to be two degrees of the same state, there being, in both, sanguine congestion of the brain and other interior organs.

"The cause of the interruption of the circulation between mother and child, he refers exclusively to pressure on the cord by the body, but especially by the head of the child in the pelvis.

"Founded on these views, he recommends two modes of procedure in cases where the head is retained after the delivery of the body; and the child's life thus jeopardized. He proposes to divide the umbilical cord, and allow it to bleed; and then to excite respiration immediately, even while the head may be in utero. For this last object, he suggests the use of a long silver cannula, with numerous perforations, by means of which atmospheric air may penetrate into the uterus, and also of a shorter cannula, which may, when requisite, be introduced into the mouth of the fœtus. In eleven infants, presenting the feet, the umbilical cord was divided as soon as the pulsations became feeble, and before the head was delivered; the children were born alive. In three cases, the division of the cord was not made, and the children were born dead. The attempt to excite respiration was not made in either of the above cases; but M. Baudelocque conceives it may sometimes be requisite. It may well, however, be doubted, whether respiration can possibly occur when the head is fixed, as the case supposes, in the superior strait of the pelvis. But that respiration may, under peculiar circumstances, occur, and even cries be elicited while the child is in utero, a point hitherto much disputed and generally denied, seems to be proved by an experiment of M. Baudelocque. In the case of a face presentation, after having punctured the membranes, he passed a cannula into the mouth of the child, and inflated the lungs. He and his assistants, M. Martin, a physician, and Madame Chaumonot, a midwife, distinctly heard, for the space of a minute, the respiratory noise. The infant was eventually delivered alive by means of the forceps.

"Giving all confidence to the facts reported by M. Baudelocque, it would seem that in some cases at least, it would be

useful to divide the umbilical cord before the delivery of the head, to relieve congestion, and to prevent effusion and death. But, can these cases be always ascertained? may not the child perish from the loss of blood, owing to the time required for the delivery of the head? and especially is it necessary to inquire whether, as M. Baudelocque supposes, this congestion always exists? or whether, on the contrary, it be not often true that the child is already in a state of anemia, where the loss of a small quantity of blood would be necessarily fatal? The questions also arise whether other causes may not be operative in the destruction of the fœtus, independent of interruption of the placental circulation; and whether such interruption depends on the pressure of cord, as has been usually supposed; or on some other circumstance, connected with pelvic presentations?

"M. Hervey de Chegoin, in a report to the Academy, on the communication of M. Baudelocque, has noticed several of the above questions; and expressed his doubts on many of the positions assumed by the author of the essay.

"In presentations of the inferior extremities, and of course in the operation of version by the feet, do not fœtuses often perish in consequence of the force applied by the accoucheur, rather than by pressure on the cord? M. Baudelocque and Madame Lachapelle would say, no; because they have met with cases where great force had been exercised, even to the tearing of the vertebral ligaments, and yet the child has survived. The reporter, however, doubts the legitimacy of the deduction, when the results of cases in which little or no traction has been exercised, are compared with those in which much force had been employed. Certainly few can doubt the injurious effects of traction on the lower extremities and body, in cases where the head is retained, and the consequent danger to which the child is exposed; especially when, as is not unfrequently the case, from ignorance or inattention, the neck is also twisted. The only wonder which can be excited is, that all do not perish under this management. Hence, as the effect of traction, when the head is entering or engaged in, the superior strait, is almost always injurious by causing the head to present unfavourably, the practice, however general or sanctioned by authority, should be abandoned; no force of any amount should, at this stage of the operation at least, be applied to the trunk of the infant; but, if any resistance be required, it should be judiciously directed to the head itself.

"There can be no doubt that M. Baudelocque is in error in referring the interruption of the circulation between the mother and child, in all cases to pressure on the cord alone; for as the reporter remarks, in pelvic presentations generally, after the trunk is delivered, the uterus has so contracted that a separation of the placenta from the uterus is very frequently effected; and in some cases, especially where the head has descended into the excavation, the uterus may be emptied not only of the child, but also of the placenta. In all such cases, death must soon occur from the cessation of the placental functions, independently of pressure on the cord.

"What is the result of compression of the cord? M. Baudelocque contends that in all cases the result is *plethora*, whence apoplectic congestion and effusion is demonstrated by dissection. But, says the reporter, this is a surprising assertion; for if the pressure be made equally on the vein and on the arteries of the cord, the fœtus, it is true, no longer sends blood to the mother; but also no longer receives any from the mother by the umbilical vein. The exit of blood is prevented, but the supply is also cut off; therefore, there can be no increased quantity. M. Chegoin, however, carries this argument much farther, and contends, that as the circulation of blood in the vein is effected only by the agency of capillary vessels, while the passage of blood through the umbilical arteries is facilitated by the contractions of the fœtal heart, it follows that when the vessels of the cord are equally pressed upon, the course of blood may be arrested in the vein, but not in the arteries, where the momentum is greater; in other words, that the exit of blood is continued while the supply is arrested. Hence, the fœtus, instead of being plethoric, may actually perish for the want of blood, and this condition, M. Chegoin intimates, would be more likely to ensue when the placenta was separated from the parietes of the uterus. This apparently specious theory is supported by the well known fact, that children are born presenting externally very different appearances under the circumstances now contemplated. In some, the child is livid and swelled, particularly on the head, neck, and chest; the cord is large and tense, and on being cut, the blood issues with much impetus. In others, the infant is pale and exhausted, its limbs flaccid, features contracted, cord small and pallid, and when divided furnishing little or no blood. The former is regarded as a state of apoplexy; the latter as a state of anemia, of syncope, or asphyxia.

"We must, however, dissent from the idea of actual plethora or anemia in those cases where death suddenly occurs, the mother and child having been previously in a natural and healthy condition. Independent of many facts which might be adduced in opposition to these theories, both opinions seem to be predicated on an erroneous view of the fœtal circulation: viz. that the blood of the fœtus passes indirectly by means of the umbilical arteries and maternal veins to the mother, and the blood of the mother indirectly by maternal arteries and the umbilical vein to the child; so that blood might be lost by the child from its arteries when the supply by the vein was arrested, whence anemia; or, that the supply might be continued from the mother while the exit by the arteries of the cord was diminished or suspended, whence plethora. But we thought that these views had been abandoned by good physiologists. There is satisfactory proof that there is no direct or indirect communication between the blood of the mother and that of the child. The latter forms its own blood in utero out of materials furnished by the parent, as certainly as the chick forms its own blood in ovo, out of materials there provided. The blood from the umbilical arteries of the child passes to the radicles of the umbilical vein, and not those of the maternal vessels; and hence any variety of pressure on the arteries or vein of the cord can have but a comparatively trifling influence on the quantity of blood at any time in the body of the fœtus.

"If, therefore, neither plethora nor anemia be the cause of death when pressure is made on the cord, whence the source of mischief? Very many have referred it to the simple interruption of the circulation, but this is not sufficient, as death occurs too suddenly to admit of this explanation; and moreover, the anatomical structure of the fœtus is such as to allow a perfect circulation of blood, even if the cord be completely obstructed. The injury, therefore, must be referred to some other source, and as this death occurs suddenly, and is usually accompanied with great venous congestion, and may be prevented by establishing at once the respiratory process, it may be referred to the suspension of the purifying influence of the placenta on the blood, the placenta acting as lungs to the fœtus—how is unknown. Hence, as congestion of venous blood follows the suspension of the respiratory process, congestion follows the suspension of the placental influence, and may be succeeded by the effusion of blood as testified by Baudelocque and others. It is

difficult, however, to account for the opposite condition of the fœtus, or to specify the particular circumstances which produce a state of congestion or syncope. There are wanting a very careful observation and collation of facts on this subject. But if it be true that children are born sometimes in the one, and sometimes in the other conditon, the practice of dividing the cord in *all* cases of delay must be very dangerous, even should future experience confirm the recommendation of M. Baudelocque in cases where congestion can be demonstrated to exist.

"Again: should the hypothesis of the author be correct, that in all cases of asphyxia of new-born infants, there is congestion of some internal organ and often effusion, yet the practice he recommends must be injurious, as the general circulatory system is depressed and emptied. The local congestion, in such cases, will not justify general depletion. Infants are often recovered from this state, not by depletory measures to which none resort, but by internal and external stimuli which sympathetically excite the respiration and circulation.

"It is a difficult matter to determine, by external appearances, the precise condition of the internal organs in this asphyxiated condition of new-born infants. Baudelocque insists that congestion always exists, and often effusion, and appeals to his dissections, where such changes were invariably perceived; but the condition of the organs after death, as regards their vascular fulness, is no certain index of their state before death; and, as infants born in this state of asphyxia are frequently preserved by judicious and persevering efforts, we must conclude that such congestion and effusion either do not exist, or that they are less injurious than usually supposed; and moreover, that stimulating, not depletory measures are suitable in such supposed cases of congestion.

"As to the apoplectic state above described, all will unite in the importance of evacuating the blood—a practice commonly resorted to, and which may be employed as M. Baudelocque recommends, even before the delivery of the head. An additional remark, however, is of importance, that this depletion should be followed up by stimuli to the surface, nostrils, rectum, &c., as in cases of asphyxia; for the actions of the heart and arteries are feeble, and the surface cold in these apoplectic cases, evincing depression of arterial action with the fulness and turgescence of the venous system. Hence, while we empty the veins, the blood should be determined to the arterial system, that the natural actions may be fully re-established.

"On the whole, we agree with the reporter, M. Chegoin, that death in pelvic presentations is not simply the result of pressure on the cord, but may also ensue from other causes, as injury to the spinal marrow, detachment of the placenta, &c.; that general plethora does not exist when such interruption occurs; neither, we would add, is there any deficiency of blood in the fœtus; and that, in a practical point of view, the states of asphyxia and apoplexy are so far different, that in one the loss of blood would be injurious, but in the other highly useful. We believe, however, that these cases are so far of the same character, that in both, the arterial circulation is depressed; of course, the phenomena of organic life diminished. The one condition may be regarded as a simple state of asphyxia, the other as asphyxia with venous congestion of the vital viscera; the one requiring simple but appropriate stimulation, the other, in addition, evacuation of venous blood to relieve oppression and facilitate reaction of the heart and arteries."

901. These considerations early engaged the attention of Smellie; and the result of his deliberations was, the practicability of applying the forceps with success in such cases. Accordingly, he has left upon record his method of employing them, and the success attending it. He has been followed by De Leurie, Baudelocque, and others. I am every way disposed to do justice to the merit of this application of the forceps; and consider it as a real improvement in the art, whenever their application is guided by experience, or their employment properly limited.

902. It will be readily admitted, by all who have attempted the application of these instruments, with a view to relieve the head when the body was delivered, that it is attended with no inconsiderable difficulty, even in the most simple of the cases in which they may be required; how much more, then, when the head is remote from the inferior, and perhaps tightly wedged in the superior strait; in both of which cases the use of these instruments is recommended. I did not succeed in the two or three instances in which I employed them, under the circumstances described by Smellie and Baudelocque, and as represented by the former in his 35th, and by the latter in his 14th plate. I will not say that their application is impracticable because I failed; especially as both Smellie and Baudelocque declare they have succeeded; but there are several serious difficulties to oppose their application, which I will endeavour to point out: 1st. When the head of the child is at the superior strait, and engaged with its

greatest length between the pubes and sacrum, or even when the forehead and vertex offer to the sides of the pelvis; as the axis of this strait is so much in advance of the inferior, that it seems almost impossible that the perinæum could be pressed so far back, as to permit the forceps to correspond with it, that they may securely grasp the head;* 2d. That if the head be even grasped by the forceps, it must be in the direction, or very nearly so, of the perpendicular diameter of the child's head, instead of the oblique; a circumstance of great consequence to the success of the operation; 3d. This advantageous position of the head for the use of these instruments, may lead to the belief that they are well placed, because their handles unite without difficulty; whereas, they but very partially embrace the head; and if an effort be made to extract, they will most probably slip, and the uterus, vagina or bladder be severely injured.

Sect. I.—*Cases proper for the Forceps.*

903. From these considerations, I would confine the use of the forceps, in the cases under consideration, to two situations of the head, and those at the inferior strait. *a.* The first when the vertex is behind the symphysis of the pubes, and the face resting on the face of the perinæum; *b.* The second when the forehead is behind the symphysis, and the vertex lying towards the hollow of the sacrum.

a. Mode of Operating in the First Case.

904. It rarely happens that the forceps are indicated in this situation of the head, since, when it arrives here, it may be almost always delivered by soliciting the voluntary powers of the woman; by depressing the chin; and by a judicious force exerted upon the trunk. But at this moment, the woman may be attacked by some accident; or the head may be very large, or the pelvis narrow; the cord may be in danger of compression; the woman may be too feeble to make any effort to relieve herself, and it might require too much force for the safety of the child, to attempt its deliverance by the body alone, yet the welfare of it may require immediate delivery.

* This will be readily understood, when is is recollected, that the direction of the opening of the superior strait, is at an angle of about 30°, and consequently, its axis, and that of the inferior strait, do not coincide.

905. When the circumstances of the case will most probably be improved by the use of these instruments, we should apply them, if at hand, without loss of time,* in the following manner; the body of the child must be carefully wrapped up in a cloth, and carried over the mons veneris, as far as it can be done, without injury to its neck, and supported there by a careful and judicious assistant; the chin of the child should be depressed, and the male branch of the forceps be passed to the left side of the pelvis depressing the handle pretty suddenly against the perinæum: this must be more or less, as we may find it necessary to make the blade conform as much as possible to the oblique diameter of the head: when this is arranged, the handle must be sustained until the other blade is passed on the opposite side of the pelvis, and made to correspond with its fellow—the handles must now be locked, and drawn in such direction at one and the same time, as shall tend to disengage the vertex from behind the pubes, and at the same instant raise the face along the perinæum, until the chin and other parts of the face successively pass through the os externum.

b. Mode of Operating in the Second Case.

906. The only difference in the mode of operating in this case from the first, (905,) is, that the body of the child must be carried backward, and gradually depressed as the head disengages backward.†

* It might, on some accounts, be proper to be provided with these instruments, whenever we have leisure to send for them, in all such cases as we cannot decide positively that they will not be necessary. I was once made very happy by having them with me, when sent for to the aid of a midwife. The patient was pretty far advanced in life before she married; she had lost three children previously, and was now in labour with a breech presentation. The child was very large, and required the fillet—the breech I delivered, the body followed, and no difficulty was experienced until the head was stopped at the inferior strait, in consequence of its size. I employed as much force as I dared, and the woman, exerted herself powerfully; but the head, though well situated, could not be made to pass. I was very anxious about the life of the child, and the poor mother begged that I might save it at any expense of pain to herself, as she "had lost all her poor babes before." I determined to try the forceps, as I had brought them with me, and did with the happiest effect.

† Baudelocque advises the forceps in these cases, when the child is dead, instead of the crotchet.

CHAPTER XXVIII.

OF THE PRESENTATIONS OF THE FEET.*

907. The presentations next in the order of frequency, are those of the feet; these presentations are with propriety ranked among the natural labours, because the woman is enabled to deliver herself. Baudelocque says that "those labours in which the child presents the feet, considered as natural, are not the most advantageous; but as preternatural, they must be esteemed the easiest and the most favourable." In this I cannot exactly coincide, at least as far as regards the safety of the child, which, in my opinion, ought always to enter into the calculation; for its welfare must be looked upon as constituting at least a part of what is to be understood by the words "most favourable." I have elsewhere, (858,) assigned my reasons for this.

908. Had not the erroneous principle been so often inculcated, and still more frequently acted upon, "that in presentations of the feet, not to deliver the woman as speedily as possible, was to exercise a cruelty towards her, by permitting her to endure hours of pain, when it was in our power to relieve her in a very short time, by exerting a force by the feet, which would speedily deliver the body," we should have had fewer instances to complain of injuries sustained by the mother, and fewer occasions to lament the death of the child.

909. It should be held as a fundamental principle in this variety of labour, and all the others enumerated under the title of natural, that they must be considered as such in the true sense of the word, at least until the uterus is dilated, and the membranes are ruptured, and after these have taken place, only to consider them as preternatural, or labours requiring assistance, when they are complicated by accidents, or when their progress is retarded by causes existing in the uterus itself, or from the position of the child. Under such circumstances, we are not only justified in aiding the woman in her struggles, but it becomes a duty to do so, in the best and most efficient manner the case will admit. But to do this with the greatest advantage to both mother and

* Of twenty thousand, five hundred and seventeen births, there were 234 feet presentations: of the 1st, 135; of the 2d, 86.

child, requires a thorough knowledge of the mechanism of these labours, as well as considerable address to fulfil the various indications, their different positions create; that the former need not suffer from the effects of ignorant rashness, or the latter fall a victim to it.

910. The presentations of the feet are readily distinguished from all others, by there being no other parts of the child which resemble them; the hands alone bear any analogy; but from them they are easily told by the projecting heels, the short toes, and especially by the absence of the thumb. Baudelocque, whom I shall follow, has divided presentations of the feet into four species —the distinguishing marks of each being derived from the part of the pelvis to which the heels and toes are directed; accordingly, four species are made.

Sect. I.—*Species of Feet Presentations.*

911. In the first presentation, the heels are a little anterior to the left acetabulum, and the toes are directed towards the right sacro-iliac symphysis; the breast and face are above and over it, while the back is placed to the anterior and left lateral part of the uterus. It may, perhaps, be proper to remark, that in these presentations, the feet and legs do not hang loose or dangle in the pelvis, but, on the contrary, the thighs are flexed against the abdomen, the legs folded against the thighs, while the heels are almost always placed against the breech, or are in its immediate vicinity. I thought it best to state this, that the difficulty which is sometimes experienced in bringing down the feet may be better comprehended. It must be also borne in mind, that both do not always present at the same time, and that they are so moveable in the pelvis oftentimes, that it is more difficult to locate their exact position, than to distinguish it is the feet that are presenting.

912. In the second presentation, the heels are behind the right acetabulum, or a little forward; the toes look toward the left sacro-iliac symphysis; while the breast and face are above and over it; the back is placed to the right anterior portion of the uterus.

913. In the third presentation, the heels are to the symphysis pubis, and the toes toward the sacrum; the back is placed to the anterior part of the uterus, while the breast and face look towards the lumbar column.

914. In the fourth presentation, the position of the child is exactly reversed; the heels are to the sacrum, and the toes to the pubes; the back towards the lumbar column, and the breast and face are turned towards the anterior part of the uterus.

915. Nature seems to have been particular in the arrangements of the presentations of the breech, feet, and knees, by making the numerical order of each resolve themselves into one general position, so soon as the legs are without; so that the most favourable situation, or the first presentation of the breech, of the feet, and the knees, have each of them the legs in precisely the same situation when delivered: so true is this, that did we not arrive before this happened, we could not tell with which of these presentations the labour commenced—the same may be said of all the rest. We are, therefore, much indebted to Baudelocque for his ingenious and natural arrangement of these labours. It is also remarkable that the frequency or infrequency of each of these different species of natural labour should be, with few exceptions, in the order of their numerical succession: thus, the first presentations of the breech, feet, and knees, are more frequent than the second; the second more frequent than the third; and this third more frequent than the fourth, &c.

916. Why is it that we meet with more presentations of the feet in premature deliveries, than in those at full time? or, is it only coincidence?

Sect. II.—*Preternatural Labours in which the Child presents the Feet.*

917. The causes which may render a labour preternatural, in which the child presents the feet, may be any of those already enumerated, (651;) or it may depend upon some irregular and inefficient action of the uterus, or the mere position of the child itself. Should either of these accidental causes complicate a labour in which the child presents the feet, we must consider it a sufficient reason for interfering with its progress; and we must expedite the delivery by bringing down the feet; the mode, however, of doing this will depend upon the particular presentation we may have to contend with.

918. From the position which the feet almost always assumes in these presentations, it will be readily perceived, that one cannot well descend without the other, and that it is the width of the breech, thighs and legs, which offer together at the superior

strait; hence, they will sometimes become jammed at this part, and the feet, or a foot, will cease to advance, and as this may happen, and the difficulties of the labour arising from this may be increased, by some one of the accidents already enumerated (651,) they give sufficient reason for manual interference. Or the uterus may, from any of the causes we have already acknowledged to be capable of such effect, be incompetent to force the parts down to the bottom of the pelvis, though no embarrassment be created by position. Or the fourth presentation itself may be considered as essentially bad, and require our interference.

919. Under either of these circumstances, we are obliged to convert an otherwise natural, into a preternatural labour. It will be constantly kept in mind, when taking hold of the feet is recommended, it is always supposed that the membranes have been ruptured, and the os uteri dilated, as has been uniformly inculcated for every operation of the kind. It may be remarked here, that there will be some difference in the mode of acting in footling cases, arising from the circumstance of presentation, or of one or both feet being within reach; but these will be illustrated as we proceed. We will repeat, lest it be forgotten, that the woman is supposed to be constantly placed upon her back, as recommended for all cases of preternatural labours.

Sect. III.—*Mode of acting in the First and Second Presentations of the Feet.*

920. It has already been remarked, that, in both these presentations, when the feet are without the vulva, that the mechanism is the same as the first and second breech presentations; therefore I shall only point out the mode of treating the labour until that period; for, afterwards, every thing must be conducted as directed for those presentations.

921. When it is agreed that there is a necessity to expedite the labour, it must be done by introducing the hand into the vagina, if the feet still remain at the superior strait; if this be the case, we pass the hand until we can by a proper grasp possess ourselves of them; and, when secured, we draw them downward; but, if this require more force than it would be prudent to exert, we must desist, and act upon the breech, by gently raising it upwards: this will almost always permit the feet to fall down; or, at all events, enable us to proceed with them through the pelvis.

Should but one foot offer, we may act upon it, and oftentimes successfully, when the child is small compared with the size of the pelvis; but if it come reluctantly, and evidently requiring a considerable degree of force to bring it along, we should cease to act upon it, and search for the other foot.

922. When the second foot is accessible, it is always best to make it descend with the first; and not merely push it up that it may unfold itself along the abdomen of the child. But let it be recollected, when we are obliged to search for the second foot, it is a matter of consequence to make a proper choice of hand; for it may be resting on the margin of the pelvis, or it may be unfolded and high up in the uterus; therefore, in either case, the facility of the operation will very much depend upon the hand that is employed—this I well know from experience. The rule in these cases is precisely the same as for the breech cases of the same numerical denominations; namely, the left hand for the first, and the right hand for the second presentation, &c.

923. The reasons wherefore I prefer having both feet to act upon in these cases are,—first, we can exert the necessary force to much greater advantage by acting with both; secondly, we run much less risk of doing injury to the limbs; for if we act by one alone, we may chance to hurt it by the force not being divided; thirdly, we can give a better direction to the body as it descends; when it is necessary to effect any change upon its course.

924. The only difference in the mode of acting in the second presentation and the first, is the necessary choice of hand—in every other respect the mechanism is the same.

925. Should more than two feet be found in the passage, as in twin cases, we must be careful to select those which belong to the same child: this sometimes creates more difficulty than would at first be imagined; for simply selecting a right and left foot, by no means proves they belong to the same body; and if they should not, much inconvenience may be experienced. It is true, this circumstance will rarely occur, as it seldom happens that the membranes of both give way at the same time, or before one of the children is delivered; yet it happens sufficiently often to make the caution necessary. An instance of this kind occurred to me some years ago; for, in attempting to bring down two feet, (properly selected, as I supposed,) where there were three, I got a foot of each of the children: I discovered my mistake, however, sufficiently early to enable me to pass up my hand, and select the proper foot, but not without some difficulty.

Sect. IV.—*Method of Acting in the Third and Fourth Presentations of the Feet.*

926. Were I permitted to draw a conclusion from my own experience, or take for fact what is stated in the register of "l'Hospice de Maternité," either of these presentations would be found to be extremely rare, and especially the last. Of the third presentation, I find but three instances recorded in nearly thirteen thousand cases, in the practice of that institution, and of the fourth but one. In examining my own practice, I find two of the third, and but one of the fourth presentation.

927. The third presentation is not so replete with inconveniences as the fourth, nor so uniformly fatal to the child; yet they are sufficiently so, to make us fear when it occurs, especially if the forehead does not spontaneously turn from the projection of the sacrum, and place itself before the sacro-iliac symphysis of one side or other of the pelvis, that the head may descend in a diagonal situation to the lower strait—when it arrives at this place, and in this direction, it will rarely happen that the face cannot be made to apply itself to the perinæum at the last period of labour.

928. Should this favourable disposition of the head, however, not take place spontaneously, it points out what should be done to make the labour more advantageous to both mother and child. Should we have charge of the case sufficiently early, that is, before the feet have descended, and when the membranes have but lately yielded, we may dispose the head to turn to one side, by making the body observe an oblique position in its descent, by turning the toes to one side of the pelvis. Indeed, this would seem to be almost the only period at which we could pretend, with any certainty of success, to do this, by any manœuvre performed on the body of the child; for after it is either in part, or wholly delivered, they would be almost nugatory.

929. We are directed by most writers who have mentioned this, and the fourth presentation, to attempt this change, by giving an extensive twist to the body. Thus, La Motte, Levret, and Smellie, advise this motion to be made, by turning the child's body, under the expectation that the head and face will obey the impulse, without seeming to recollect that in these cases the head is not very moveable in the pelvic cavity, especially when the waters have been long drained off; and that

to change it would require much more force than can be safely exerted, or a much more extensive twist of the child's neck than would be compatible with its safety.

930. When the body is delivered, and the shoulders have descended sufficiently low to permit it, we should immediately ascertain whether the position of the head be correct or not—should its position be favourable, we proceed with the labour, as had been already directed for the breech; should it not, we must endeavour to rectify it, by acting upon the face so soon as the shoulders have been cautiously delivered; that is, without having exerted a force upon them, sufficient to jam the head in a bad direction at the superior strait.

931. Should the head be jammed in the superior strait, by any ill-directed force, it must be relieved as quickly as possible, if we expect to preserve the child—this must be done, by passing the hand under the head at the bottom of the pelvis, and gently raising it, so as to lift the vertex from behind the pubes, and at the same time turn the face to one side. The side to which the face must be turned, will depend, first, upon the inclination it may have to either the right or left side; choosing that always to which it most tends; and, secondly, upon the hand which may be employed to rectify the position, when no inclination toward one side or the other is observed; if the right hand be used, it will be easiest, cæteris paribus, to turn it towards the left, and the reverse.

932. Before, however, this reduction is attempted, it will be well to have the body of the child carefully raised by an assistant, towards the abdomen of the mother, that the hand may be introduced with more certainty and facility; care being taken in doing this, that the head is not drawn down, by the body being carried up. When the position of the head is adjusted, we must act as has been directed in such cases for the breech.

933. In the fourth presentation, we can scarcely expect to improve its position, unless we are very early with the patient; that is, immediately after the yielding of the membranes, and have, at the same time, the os uteri sufficiently dilated to enable the child to obey the direction we mean it should take. Unless we can take advantage of this period to move the face toward one of the sides of the pelvis, I am disposed to believe that very little can be done until the shoulders are without—except, indeed, the head be small compared with the pelvis: in this case, there is very little necessity for assistance, as it will pass, face upward, under the arch of the pubes, without much difficulty.

934. When the shoulders are without, I am sure it will *sometimes* succeed, to turn the face towards one of the foramina ovalia; the occiput, by this change, will descend a little, and offer itself towards one of the tubers of the ischia, or a little obliquely as regards the lower strait; and may, by a well-directed force, aided by the voluntary contributions of the mother, be made to escape in this diagonal position.

935. I would always recommend to the young practitioner, in cases of such very doubtful issue to the child, and more especially in the fourth presentation, to advertise the friends of the patient, of the risk the child must inevitably run in its delivery; that no exorbitant hopes may be entertained of its eventual safety.

936. There will be, of course, the same propriety in using the forceps in any of these cases, as was expressed for their employment in breech cases.

CHAPTER XXIX.

PRESENTATIONS OF THE KNEES.*

937. The presentation of the knees are very rare indeed; and I might, perhaps, have passed them over in silence, without incurring much censure for the omission. But I have chosen to notice them, *because they are rare;* and because they are sometimes embarrassing to the young practitioner; for I well recollect my own trepidation, when called to a case of this kind in the very commencement of my practical career. To add to my embarrassment, I was called to the assistance of a midwife, who could not well have been more ignorant of what was proper to be done than myself. I will not pretend at this time to designate the particular presentations of the knees, as I knew nothing about their presentations at that time; I only recollect, that I reasoned in the following manner upon the subject:—"If the feet were without, I should feel little or no difficulty in the case, as I once attended a labour of this kind successfully; and it cannot be very

* Of 20,517 births, there were only four of the knees. I have seen three presentations of the knees, in about 10,500 births.

dangerous to pass the hand to them, since they must be in the neighbourhood of the knees." With these reflections, I passed a hand into the vagina, and tracing the legs, soon obtained the feet, which I had the *good luck* to bring along, by accidentally, (for so it was, as I had no principles to direct me,) disengaging the knees from the margin of the pelvis, against which I now know they must have butted, and terminated the labour successfully to both mother and child, but with severe agony to myself.

938. These presentations are more unusual than any I have hitherto considered; not occurring oftener, perhaps, than once in a thousand or more times. They are less favourable than any of the presentations I have classed as natural; and, agreeably to Baudelocque, they may present in four ways:

939. In the first presentation of them, the legs are to the left side of the mother, and the thighs to the right.

940. In the second, the legs to the right, and the thighs to the left.

941. In the third, the legs under the arch of the pubes, and the thigh towards the sacrum.

942. In the fourth, we find a reverse of the third.

943. The mechanism of these labours is precisely the same as those of the feet; for the latter must be quickly developed, if the labour proceed; and then they are reduced to footling cases.

944. The knees may be distinguished, when together, by their similarity, and the roundness of the bony angles they form. When but one presents, which is most commonly the case, it is not so easy; but we may trace the leg, and find by this means the foot, which puts the matter out of doubt.

Sect. I.—*Causes which may render Presentations of the Knees preternatural.*

945. Until the membranes be ruptured, and the uterus properly dilated, a presentation of the knees, if the presentation can be discovered before that period, is to be treated as has been directed for the breech or the feet.

946. Baudelocque directs that we should not search for the feet in these presentations, unless the labour be complicated by some accident; but the difficulties which a woman almost always experiences in delivering herself in these cases, are such as to render it, I think, the better practice always to bring down the

feet; especially in the earlier part of the labour, when neither force is required, nor inconvenience hazarded, by the proceeding. I once witnessed a case where many hours of severe suffering had been endured, from a presentation of the knees, without its having made the smallest progress, after the first hour or two: the breech and knees had progressed together in such a manner as to completely occupy the pelvis; several pretty severe attempts had been made by the midwife, as she herself declared, to make the knees descend, by acting upon them to the serious injury of the child. After this period, I was requested to visit the patient. I found the presentation to be the first; but the breech had descended so much as to carry the knees against the right sacro-iliac symphysis, and thus prevented the farther progress of the labour. I introduced the right hand, and with some exertion was enabled to raise the breech sufficiently to permit the feet to fall down near to the os externum; the knees were then readily removed from their position, and the delivery speedily effected.

947. Now, as there is no security that the breech will not descend in proportion to the advancement of the knees, and if it do, the knees will almost certainly be arrested against some portion of the pelvis, in which case the contractions of the uterus and the efforts of the woman are almost sure to be unavailing, though continued for hours, I think it always best to bring down the feet and knees, by pushing up the breech, whether the case be free from, or complicated by any of the accidents already mentioned; unless the os uteri is sufficiently dilated, and the feet are found to unfold, or the knees to advance: in this case we may trust the labour to nature.

Sect. II.—*Mode of Operating in Presentations of the Knees.*

948. When we attempt the relief of the woman in such cases, we should commence as early as the state of the uterus will permit, and especially when it may be either the third or fourth position; in either of which we should experience all the inconveniences which are found in the third and fourth presentations of breech and feet, with the contingency of the knees stopping in their progress; and this, at a time when it might be either difficult or dangerous to attempt making the changes upon the direction of the body, so important to the safe delivery of the head.

949. Baudelocque recommends pushing up the knees when

we attempt their reduction; but, so far as I am capable of comparing the two methods, I think acting upon the breech is the better plan.

950. He also advises the employment of the fillet, or blunt hook, for the delivery of the knees—I confess I have tried neither—but it appears to me they cannot in every position of the knees be employed with advantage; but in one I think they may aid, (that is, the fourth,) when these parts have descended low in the pelvis; as then the direction necessary to the delivering them will be the one, and the only one, we can give them by either fillet or blunt hook. The proper hand must be employed, when we attempt to raise the breech, or we may fail in the attempt to liberate the feet and knees—in the first presentation, we must use the right hand; in the second, the left; and in the third and fourth, either.

CHAPTER XXX.

OF TEDIOUS LABOUR.

951. Many causes have been assigned for tedious labour; some of which are sufficiently evident; while others are extremely obscure, if not altogether inscrutable. The causes have been divided into constitutional and local; both of which unquestionably may exist, but the former is much more rare than the latter. The general, or constitutional causes, appear to consist almost exclusively in passions, or emotions of the mind; or at least, to some peculiar condition of the sensorium commune, and nervous system. Thus, we see the uterine action rendered feeble and transitory for many hours together, or suspended from half an hour to a number of days, from the influence of some unexpected or distressing intelligence; or, sometimes, even the presence of a strange accoucheur (259) or midwife, will have the same effect.

952. The state of the muscular system, appears to have but little influence upon uterine contraction; for when it exists in its most healthy condition, it by no means ensures the best efforts

of the uterus; nor does a state of almost exhaustion, necessarily interrupt the regular and successful play of this organ.

953. Nay, we may go farther, and declare, that the functions of the uterus are, in very many instances, never more rapidly, or successfully performed, than when the powers of the muscular system are below the natural standard of health, or even, indeed, when they are much reduced. Thus, in the last stages of fever, or of phthisis pulmonalis; or, in a word, any other exhausting disease, the uterus, at the proper time, is almost sure to discharge its contents, not only with rapidity, but almost without pain. Here, the relaxed condition of the soft parts immediately concerned in the act of delivery, cease to oppose the contractions of the fundus and body of the uterus; and this organ itself seems to be so economical of its powers, as not to suffer their waste, even when all the other muscles of the body are rapidly yielding them. Here, the os uteri gives way, with instant and seeming willingness, to uterine contraction, and will not oppose by obstinacy, as in most cases, the passage of the child, and render labour tedious.

954. In general, the condition of the os uteri, (cæteris paribus) may be looked upon as one of the surest guides to determine the duration of labour; and hence, when it is not disposed to yield, it becomes the most common cause of tedious labour; and hence, we may learn why the local cause or causes are much more frequent in their operation than the constitutional. Among these we may especially reckon—

1. A want of contractile force of the uterine fibre.*

2. A rigid condition of the soft parts concerned in labour; especially the mouth of the uterus itself.†

3. Cicatrices, or other imperfections, arising from injuries done to the parts concerned.‡

4. A premature escape of the liquor amnii.

5. Over-distention of the uterus, producing torpor or inertia of this organ, and too dense a condition of the membranes.§

Of these we shall treat pretty fully, and illustrate the operations of each cause, by appropriate examples.

* See Chapter on Ergot.

† See Section on Rigidity as a cause of Tedious Labour.

‡ See Section III.

§ See Section V. and VI.

Sect. I.—*Of the Want of Contractile Force.*

955. This is a condition of the uterus, and not an extremely unfrequent one, in which neither of the other enumerated causes are present, and for which it would be very difficult to assign the true one. It may, however, arise from some original defect of the uterine fibre, as it is occasionally found to be habitual with some women; or it may follow the over-action of this organ. In the cases under consideration, we have not to contend with any unfavourable condition of the soft parts; for the defect seems to be seated in the uterine fibre itself. And it is in such cases, that the ergot or secale cornutum, has been found so highly useful. See Chapter on Ergot.

956. I shall relate a few cases, by way of illustration, of each of the conditions of the uterus just named.

a. Where the powers of the uterus were partly exhausted by long-continued action.

Case First.

1817, Dec. 21st. I was requested to visit Mrs. ——, in consultation. She had been in labour sixteen hours, with a first child, and was twenty-eight years of age. The waters had discharged themselves early in the labour: the pains had been, up to a certain period, strong and frequent; the head had passed the os uteri, and every expectation was entertained, for some time, that the labour would have terminated promptly; but in this the medical attendant, and the friends of the patient, were disappointed.

The head occupied the inferior strait, and the vertex was applied nearly fair to the arch of the pubes. For some time the pains continued to be frequent, but feeble; but eventually, they nearly subsided altogether; after waiting, with things in this condition, for six hours, without the smallest advantage, I was requested to visit the patient.

I found the lady suffering much from a generally spread pain over the abdomen; some fever; great restlessness; pains nearly gone, and very inefficient; and the head about to emerge from under the pubes. I soon perceived that the uterine forces were totally inadequate to depress the parietal protuberances below the tubers of the ischia. We, however, waited twenty

minutes more to ascertain the absolute power of the pains, and during each, attempted to aid it, in the adaptation of the vertex to the arch of the pubes; that is, I assisted to turn the face exactly into the hollow of the sacrum. By this change in the position of the head, some advantage was gained, as it necessarily diminished resistance; but it did not enable the uterus to accomplish the labour. By this time the patient could hardly be said to have pains.

I now proposed to give our patient twenty grains of ergot: this was acceded to, and it was administered to her immediately. The first dose of the ergot evidently roused the dormant powers of the uterus; and a second, of the like quantity, enabled it to expel a very large healthy child.

Case Second.

1818, May 30. I was called at eight o'clock, P. M., to Mrs. ——, the mother of several children; she was constitutionally delicate and nervous. Her pains were weak, and returned only at long intervals, sometimes not recurring oftener than once an hour. On the 31st, at eight o'clock, A. M., I made an examination for the first time; found the os uteri dilated pretty considerably, and very yielding; pains still very slow. During a pain I gently stretched the mouth of the uterus, with a hope it might excite a stronger action in the body and fundus, but without advantage. As the parts were all favourably disposed, I ruptured the membranes; this also failed to excite contractions of a better quality. At two o'clock, P. M., I gave twenty grains of the secale cornutum, and repeated it in fifteen minutes: pains now succeeded each other so rapidly and forcibly as to deliver the child safely in fifteen minutes more.

No case can better decide the influence and specific action of the secale cornutum than the one just related. It most strikingly exhibits the superiority of this drug over the rupturing of the membranes, though this operation is one which often succeeds. We are aware that the practice of rupturing the membranes is condemned by some, under almost any circumstance; but, in doing this, I had in expectation, first, that by taking off the distending cause from the uterus, it would assume its usual powers, as not unfrequently happens when the waters are removed, by the unequal surface presented by the child, proving a stimulus to this organ; and secondly, and particularly, that the tonic

contraction would so certainly take place, as to secure my patient against a subsequent hemorrhage.

b. Where a want of power in the longitudinal fibres of the uterus appeared to be the cause of the delay of delivery.

Case Third.

1819, May 26th. I was called to Mrs. ——, in labour with her sixth child. She was attacked with pain twenty-four hours before; they had augmented gradually, but were very irregular in their recurrence, though very severe. The os uteri was found pretty fully dilated; the head of the child was at the superior strait, and resting upon the pubes, in consequence of a pretty extensive anterior obliquity of the uterus. Things continued in this posture until two o'clock, P. M., of the 27th. I now ruptured the membranes, hoping it might increase the contractions of the uterus, or give them more efficacy; for though the pains were very severe as regards sensation, they manifested very little propulsive power.

The rupturing of the membranes was not followed by the slightest advantage; I therefore determined on giving the ergot: a scruple dose was accordingly given. It may be proper to remark, that, up to this moment, the head had not advanced a line. In fifteen minutes after the ergot was given, the pains became powerfully propulsive; and in a quarter of an hour more, my patient was safely delivered of a fine healthy boy.

957. This case, like many others, decidedly shows the influence of ergot upon the uterus; but perhaps it declares, in an especial manner, its power over the action of the longitudinal fibres of this viscus; which, as I have already observed, (508,) have the greater agency in expelling the child. My reasons for thinking so are, first, because there were pains, even violent ones, from the commencement of the labour, until the very period of exhibiting the ergot, without the child being forwarded by them in the slightest degree; secondly, because the rupturing of the membranes, a plan generally successful in increasing pain, failed; thirdly, because the labour was terminated very soon after the character of the pains was changed, by the exhibition of the ergot—or, in other words, by the longitudinal fibres being stimulated to a healthy and effective action.

Sect. II.—*Of Rigidity, &c. of the Soft Parts, as a Cause of Tedious and Preternatural Labour.*

958. Writers upon midwifery have but very imperfectly considered the rigidity of the soft parts as a cause of difficult or tedious labour—some, indeed, do not mention it, and others do so merely *en passant*, without proposing any specific treatment for its relief. It is so common a case, that every practitioner must have met with it; yet it has failed to make a proper impression, because time and severe suffering have eventually overcome it, though not always with safety to either mother or child.

959. A rigid condition of the soft parts may, with much propriety, be considered the most frequent of the causes of a tedious labour; especially as every woman may be subject to it, as well as every variety of presentation, be complicated with it. It may, perhaps, be difficult to define by words, the precise condition of parts, said to be rigid. But by this term we would wish to convey the idea, that certain of the soft parts concerned in labour, as the os uteri, perinæum, &c., offer an unusual resistance to the efforts which the fundus and the body of the uterus make to expel their contents; and it is in this sense only, we employ the term in this place.

960. From this explanation, it seems to follow, that such a condition of the mouth of the uterus and the external parts may exist, as will resist for a longer time than natural, (all other things being equal,) the expulsive efforts of the fundus and body of this organ; so, we presume, that in these very cases, had no such resistance from the parts been present, that a less degree of force and a shorter continuance of contractions would have effected the delivery.

961. The condition of the soft parts under consideration arises, perhaps, in a failure of reciprocity of sympathy in the several parts concerned in labour. For in fault of this good understanding, if we may so term it, the ordinary, and essential changes for an easy delivery do not take place; or, in other words, to employ the language of Mr. Hunter, the stimulus of relaxation is not given, or is not obeyed. This want of consent, however, does not necessarily imply a morbid condition of the parts concerned; though it must, in many instances, have such an origin. Thus, there may be no morbid condition of the os uteri, though it resists for a longer time than usual the efforts of the fundus and body,

when these parts have been prematurely excited to action; for in this case, all the terms of utero-gestation have not been complied with. While, on the other hand, when the uterine development is perfect, and the soft parts resist the efforts of the body and fundus for an unnatural period, the presumption is, that some morbid cause may be operating, so as to change the nature of the sympathies by which these parts are governed at such times.

962. For, in the ordinary course of a healthy labour, the mouth of the uterus opens by some secret agency; or at least without any apparent force; and when this takes place, the efforts of the body and fundus are rendered as effective as prompt in terminating the labour; but when this does not happen in the order just stated, the os uteri, (all things being otherwise equal,) is then said, in popular language, to be rigid.

963. In labours of the latter kind, there is an unnatural resistance to be overcome; and to effect this, unfortunately, mechanical and other equally improper means are resorted to; which, so far from fulfilling the intention in view, oftentimes increase the evil, and convert an otherwise safe labour, (were it properly managed,) into one of great danger; or at least, into one of great tediousness, and difficulty. In such cases, and with such consequences, it is at once evident, that a wrong principle governs the attendant; for he attempts to overcome the resistance, by increasing the force of the body and fundus, or by forcing open the resisting os uteri by mechanical means.

964. The first he attempts, by the exhibition of stimuli of one kind or other, until the system is urged to the formation of fever; or to fulfil the other, he stretches the mouth of the uterus so rudely, or so repeatedly, as to produce in it an incipient, or, perhaps, a very active inflammation. By such means, he defeats the operations of nature, which would have been most safely performed, if they had, by a well-regulated plan, been permitted so to do. For, rest of body; tranquillity of mind; the abstraction of stimuli; the loss of blood; free bowels; and not allowing the soft parts to be disturbed, by ill-timed and officious touching, or ill-conceived manual aid at the mouth of the uterus, have, in a thousand instances, overcome every difficulty presented by simple rigidity.

965. Many of the errors committed in the treatment of the cases of tedious labour from rigidity, have arisen from the popular belief, that the dilatation of the os uteri is effected by the mechanical agency of the child, and the distended membranes; and

consequently, that this part is in a degree subject to the laws which govern impelled bodies. Two very important mistakes arise from this view of the subject; first, it prescribes a definite time for the dilatation of the os uteri; for it seems to be assumed that the contractions of the body and fundus, must, in a given time, *force* open this part, by the repeated shocks it receives, from the fœtus being urged so often against it.

966. Hence we find Mr. Burns declaring "if the labour be going on all the time but slowly, it is a good general rule to effect the dilatation of the os uteri within ten or twelve hours at farthest from the commencement of regular labour." This position is followed by the necessary directions for the fulfilment of this intention by mechanical means; and though we acknowledge the mode pointed out for this purpose, and the conditions necessary to render them profitable, are as well guarded as the assumption of the principle will permit, yet we must declare our unfeigned aversion to the practice; for we are every way certain that it can be done with advantage in but very few instances, even by the skilful; but never, without the risk of much mischief, by the unskilful or inexperienced practitioner.

967. When the os uteri remains unyielding for a long time, it is an evidence that the natural processes, which so beautifully, kindly, and safely effect this change, have from some cause or other been interrupted. And though mechanical force may be made to usurp the organic function, it nevertheless will always be at the expense of the health, or even the integrity, (be this more or less,) of that portion of the uterus to which force is applied.

968. So well assured am I of this fact, that I never employ force to open the os uteri. Nor do I hold the argument, "that no mischief has been seen to follow this plan," of the slightest weight; as we have it not in our power at the moment, to determine satisfactorily, any consequence, but the proximate, or immediate effect of the violence; which may be, and most probably is, but slight, or even unappreciable at the instant it is committed. But can we with any certainty declare, that many of the severe and dangerous chronic affections of the neck of the uterus, do not owe their origin to this cause?

969. There are but three situations of the os uteri with which we should ever interfere; namely, first, when this part does not coincide with the direction of the uterine forces, and the axis of the vagina. In this case, labour may become very te-

dious, for the want of a correspondence of axis; I therefore attempt to establish them, as directed in cases of obliquity of the uterus. See Section on the Obliquities of the Uterus, p. 115.

970. But I never attempt even the slight change here spoken of, until the os uteri is yielding, and at the same time dilated, to the size of a dollar, and the pains in pretty full force. By this method, not the slightest violence is committed; nor is even pain excited.

971. Second. When the pains are powerfully protrusive, and the os uteri, though pretty amply dilated, yet not sufficiently so to permit the parietal protuberances to pass freely through it. In this case, much time and suffering are very often saved, by running the extremity of the finger round the margin of the os uteri, and gently stretching it. For, in many instances, if we gain an increase of half an inch in the diameter of this part, it is all that is required, to enable the head to pass it.

972. Third. When the head is detained by the anterior portion of the uterus being in advance of it, and holding it, as it were, in a sling. In this case, that portion of the neck of the uterus, which is placed before the head, is obliged to sustain the whole force of the uterine efforts; in consequence of which it becomes not only severely stretched, but it very effectually opposes the advancement of the presenting part, and gives rise to much unnecessary delay, as well as very much augmenting the sufferings of the patient.

973. This case is one of very frequent occurrence; and women who have ample pelves, and especially those who have had several children, and are liable to the anterior obliquity of the uterus, are more particularly obnoxious to it. I do not know that any writer has noticed this cause of tedious labour; and though this cannot, strictly speaking, be considered as an instance of rigidity, it nevertheless has all the effects of that condition, as it creates delay, by a portion of one of the soft parts opposing the passage of the head; and may, therefore, with much propriety, be considered under the present head of our subject.

974. We are every way satisfied, from long observation, that this situation of the uterus, and of the head of the child, is one of the most common causes of delay when every thing else is favourably disposed, that occurs in practice; at least in this country. Whether this be so in Europe, where one of the remote causes, namely, a large pelvis, is not so general, we are unprepared to say; but we are certain, that the frequency of this rela-

tion of the head of the child, and the anterior portion of the uterus in this country, renders such labours more tedious by hours, than they would be, if no such interposition of the neck of the uterus took place.

975. It is true, that the remora which the neck of the uterus offers to the passage of the head when down before it, never of itself creates a serious difficulty; the evil chiefly consists in a painful and an unnecessary delay; but as the case is always manageable, when it is proper to offer aid, it is certainly right to correct this deviation from a strictly healthy labour, as early as circumstances will permit.

976. The proper time to act is, when the head occupies the inferior strait and vagina, completely; when the pains are active; and when the os uteri is sufficiently dilated to permit the head to pass, if the axis of the head, and that of the os uteri, were coincident.

977. To relieve the head from this state of embarrassment, we must draw the prolapsed edge of the os uteri by the point of the finger in the absence of pain, towards the symphysis pubis, and maintain it there, until a pain comes on. At this moment, the point of the finger is to be placed against the edge of the uterus, which is to be pushed upwards between the head of the child and the pubes. Should we be able to carry the prolapsed portion of the uterus above the advancing portion of the head, that is, so far as to permit the parietal protuberances to pass beneath or below the circle of the os uteri, the prolapsed portion of the neck of the uterus will suddenly withdraw itself from the finger and rise within the pelvis: the vertex will apply itself beneath the arch of the pubes, and the labour terminate almost immediately.

978. It sometimes, however, requires several trials of this kind before they may succeed: but the attempt must not be abandoned because it fail a few times; for the principle is a correct one, and should be acted upon perseveringly, should perseverance be necessary. We have every thing to gain, if we succeed; and nothing to lose, if it fail: a disappointment, by the by, which cannot well happen, if the process for the restoration of the prolapsed part be properly conducted.

979. We are convinced that we have seen very many labours shortened by hours, by acting as just proposed for such cases. It would be extremely difficult to determine, à priori, the duration of a labour of this kind, if left to itself; as the resistance which the margin of the uterus offers to the head will, for a long

time, be more than equal to the power of the uterine forces; consequently, the labour becomes stationary, and will continue to be so, until the margin of the uterus is obliged to yield by its losing a part of its power from attenuation, or perhaps by tearing.

980. Nobody estimates the general rule, "to let a labour alone that is advancing well, and is natural in its general relations," more highly than we do—we look upon it as a most wholesome restraint when acted upon; and as every way calculated to diminish ignorant and mischievous officiousness. But this rule, like every other general rule, has its exceptions; and we may be even accused of violating it unnecessarily, when we make the cases under consideration exceptions; but we should feel but little concern upon this head, if the charge be even preferred against us; as we are certain that we are justified in making them, from an ample experience.

981. Many, nay, perhaps every body, (for we have said that we did not know that this case had been noticed,) will condemn what we have said upon this subject, and consider our directions as unnecessary, if not mischievous, because they have never had recourse to them, but have permitted the uterus to perform this duty unaided; therefore, they say nature is competent to the work, and when she is competent, she is not to be interfered with. Were this rule rigidly acted up to, there would be an end to improvement, not only in the obstetric art, but in the whole range of practical medicine. Our experience, however, teaches us not to heed this sweeping, indiscriminate rule; for it is not sound practice to permit nature to struggle through difficulties, merely because it is supposed she can struggle through them; and to leave it for some time a moot point, whether or not the case will eventuate in safety, when aid, as certain, as safe, is always at command. Nor does this application of the finger ever produce pain or other inconvenience, if properly and gently managed.

982. Besides, much delay is sometimes experienced from this dropping down of the anterior portion of the uterus, by interrupting the pivot-like motion of the head, (627,) from completing itself; especially when the head occupies pretty strictly the inferior strait. In this case the posterior fontanelle will remain for a long time stationary behind one of the foramina ovalia; for its advancement towards the arch of the pubes is prevented by the prolapsed portion of the uterus interfering with the motion

just mentioned, by embracing too strictly the advancing part of the head.

983. But the pivot-like motion of the head is almost always restored the instant we succeed in passing the depending portion of the uterus above the head of the child by the point of the finger, as directed above.

984. The several situations of the os uteri just described, are the only ones I ever interfere with. For should it be thick and rigid, though pretty well opened, I never have recourse to mechanical means for its farther enlargement; I depend upon more time, or upon the therapeutical means to be named presently.

985. But let us now consider the rigidity of the os uteri as a cause of tedious labour: we will treat of its several varieties, its consequences, and mode of treatment.

Of the Species of Rigidity of the Os Uteri.

986. First, it may arise in the mouth or neck of the uterus, from the circular fibres of these parts maintaining their power inordinately long; but not inflamed.

987. Secondly, this condition may be attended with inflammation.

988. Thirdly, it may arise from previous injury done the parts, either by mechanical violence, or inflammation, and its consequences.

989. Fourthly, it may happen from a relative cause; as the disproportionate powers between the longitudinal and circular fibres.

990. Fifthly, it may proceed from the too powerful exercise of the tonic contraction of the uterus, especially of the fundus and body.

Rigidity of the First Kind.

991. This species may be divided into three varieties; viz. 1st, when the subject is very young; 2dly, where she is advanced beyond the twenty-fifth year; and, 3dly, where the uterus is prematurely excited into action.

Var. 1.

992. In this variety the soft parts are found to yield very often with great reluctance; and thus making this labour extreme-

ly tedious and painful; it would seem to arise from the incomplete development of the uterus—but each of the species and varieties will be best explained, by appropriate cases.

Case First.

"Miss V., aged fourteen years and a half, was taken in labour January 14, 1790. She had been in pain thirty-six hours, before I saw her; that is, she complained for that period, though the pains were not very severe; about twelve hours before I visited her, the waters were discharged; the mouth of the uterus was but very little opened, and the external parts not favourably disposed; the pains were now very severe, and the head was pressed pretty deep into the pelvis: she was extremely costive, and had passed no urine for many hours: an injection was ordered, which operated very freely; the catheter was introduced, and nearly a quart of water was drawn off—she was much relieved by these discharges. An hour was given, in hope that a favourable change might take place in her labour. There was but very little heat in the vagina, for she had been rarely touched. She had, however, by the advice of her midwife, been placed over water, and fumigated with burning onion-shells, but to no purpose.

I now bled her fifteen ounces; this produced some little change in the mouth of the uterus, but not sufficient to permit the head to pass, as it contracted and stiffened with each pain. In an hour more she was again bled fifteen ounces; this produced sickness of stomach, which was my signal for stopping. Upon examination now, the parts were found sufficiently dilated; there was a temporary suspension of the pains; but they soon returned, and were of competent force, and much more tolerable—the labour was soon after terminated.

Var. 2.—*Or where the Subject is not young, but with her first Child.*

993. The same general phenomena present themselves in this variety as in the first, but this case is generally rather more obstinate.

Case Second.

1798, February 17th, Mrs. ——, aged forty, in labour with her first child; she had been long in labour previously to my see-

ing her, and had suffered much—her pains were in quick succession; the waters were still undischarged; the uterus opened to about the size of a quarter dollar, its edges very firm; no disposition in the external parts to relax—she was bled largely, (40 ounces,) and was delivered in half an hour after.

Var. 3.—*Or where the Uterus is prematurely called into Action.*

994. This may happen at any period of gestation, or in any subject; but I am only now considering those cases where this takes place at the last period. It would in this variety be highly useful to distinguish it from the two just mentioned; as in the beginning it requires very different treatment. The following marks may serve to detect it: 1st. The unexpended portion of the neck of the uterus may sometimes be perceived by the touch, as at the eighth month or a little after; 2dly, the os uteri is rigid, during, and in the absence of pain; 3dly, the pains are more irregular in their accessions and in their continuance; 4thly, no secretion of mucus, nor disposition in the perinæum to relax; 5thly, no subsiding of the abdominal tumour; and the knowledge of some violent mental excitement, or muscular exertion having preceded the onset of pain.

995. Should these pains, however, be suffered to proceed without interruption, it will eventuate in a painful and tedious labour —it, therefore, should be our first care to appease uterine contraction, by remedies suited to the condition of the patient—blood-letting should be premised, if the pulse *merely permit it*, and without declaring its absolute necessity; especially as the case may require repeated and large doses, sometimes, of laudanum. Rest should be strictly enjoined; the bowels should be opened by mild laxatives, if costive: this should be followed by injections of laudanum and water, pro re nata—the diet should be mild, and in small quantities. By this kind of treatment we may very often have it in our power to interrupt this disagreeable anticipation of labour, as the following case, among many others, shows.

Case Third.

1790, January 29th, Mrs. M. L. ——, aged twenty, pregnant of her first child, after standing all day at the ironing-table, was seized with pretty regular pains. There was no subsiding of the

abdominal tumour; no secretion of mucus; the os tincæ not entirely obliterated. There was very little tension of the membranes during a pain; from these circumstances I was disposed to believe the uterus had been prematurely excited to action. She was ordered to lose twelve ounces of blood; to keep quiet, and receive an enema of a gill of water, and a tea-spoonful of laudanum—pain soon subsided; she went a fortnight longer, and her labour proceeded kindly, and was not of long duration.

996. In cases similar to the above, much mismanagement frequently takes place; especially when the patient is under the care of an ignorant midwife, who supposes the attending pains can only proceed from a commenced labour; particularly if the reckoning of the patient be nearly expired: she is of course frequently and oftentimes rudely handled; the uterus irritated, and the whole system stimulated by improper drinks or remedies, with a view to hasten the labour, as it is called—the following case is in point.

Case Fourth.

1790, August 11th. Mrs. C. pregnant with her third child, aged twenty-eight, after a severe fright, was attacked with pains: as her midwife was engaged at the time she was sent for, I was called on. From her being disappointed in her midwife, she became very much alarmed, and the pains ceased for six hours. At the expiration of this period they returned, and the midwife arrived soon after; she examined her, and found nothing like labour. She gave her a large dose of laudanum, which, not easing her, was repeated in two hours more. Her pains became more violent; she had much fever, attended with delirium.

I was now sent for a second time: upon examining the patient, the uterus appeared evidently to have been forced into contractions by the fright, and these perpetuated by the improper conduct of the midwife; but things were now in such a situation that it would have been in vain to have attempted stopping the progress of the labour.

The mouth of the uterus was thick and hard, and opened to about the size of half a dollar. As there was so much fever, I thought proper to bleed and purge her: these had a good effect, as her fever and delirium were diminished, but the mouth of the uterus was firm, and not augmented in size since she was examined before, (six hours;) she was again bled pretty largely,

the delirium went off entirely, the uterus opened, and she was delivered in less than an hour.

997. Had not this patient been bled very liberally, there is every reason to believe her labour would have had a serious termination—she lost in the two bleedings about fifty ounces of blood. This case serves as a contrast to the one just before related; as I believe the bleeding which preceded the anodyne enema, enabled the latter to produce its beneficial effects; and I am also of opinion, that had a bleeding been premised in this case, the patient would have suffered much less, and gone some time longer.

998. I think it an important rule in the farther arrangement of these labours, when pain cannot be suspended by the means pointed out above, to abstract stimuli of every kind, as much as possible; to have the bowels well opened; and then to allow the circular fibres of the mouth of the uterus to be a little fatigued, before we employ a larger or sufficient bleeding to effect the farther dilatation. We may easily know when they begin to be fatigued, by their readily yielding when the finger attempts to stretch it in the absence of pain. Bleeding alone sometimes quiets this premature motion of the uterus.

Sect. III.—*Cicatrices or other Imperfections arising from Local Injuries.*

999. It was not until the year 1796 that I learnt the value and certainty of blood-letting in cases of local injury from inflammation, or from a solution of continuity in the soft parts concerned in labour, where in healing they became contracted, and otherwise severely injured, though I had so frequently experienced its value in cases where they had obstinately refused to yield to the common agents of delivery, when in the natural condition. The long continued pressure of the child's head during its passage; the ill-judged use, and the worse directed application of instruments; and the reprehensible neglect of the perinæum when much distended—have given rise to more or less grievous injuries of these parts. These accidents will retard delivery in proportion to their extent; and if some oppose but a trifling resistance to the passage of the child, there are others, from their severity and extent, which may render it impossible without adventitious aid.

1000. Cutting instruments have been not only considered as

justifiably employed in such cases, but deemed absolutely essential for the termination of the labour,* in many instances, where bridles, indurations, and cicatrices have deranged the natural order of these parts, or so disturbed their natural functions, as to render them no longer subservient to their proper uses—hence the necessity of means so severe as the scalpel or bistoury for the relief of the mother and child.

1001. I trust, however, this terrible alternative is no longer, or at least, not so frequently necessary as heretofore; since, it is found, in some of the most distressing and extensive injuries of this kind, to yield in a very short time to the relaxing influence of a copious bleeding. To show the certainty of this remedy, even under the most unpromising circumstances, I will relate several cases where it was employed with the happiest effects.

Case First.

1796, June, I was called to Mrs. T ——, in labour with her second child. When I arrived, I received the following account of the case from the midwife: "Mrs. T—— has been in labour sixteen hours; the waters discharged six; the mouth of the womb is but little opened: and, when in pain, the os externum seems to close up; the child is as high as ever, though many things have been given to force the labour. She has passed no water for twelve hours, and is very costive.

I found her very feverish, complaining of great heat in her abdomen, and violent pain in her head. On examining per vaginam, I found, as the midwife had stated, that the os tincæ was but little dilated; its edges very rigid and hot—as was the whole tract of the vaginæ; the rectum much distended with feces, and the bladder by urine. The head of the child was still above the brim of the superior strait; but its situation could not be exactly determined, as the os uteri was not sufficiently opened for the purpose.

She was bled immediately to the amount of twelve or fourteen ounces, and an injection was thrown up, which procured two stools and a discharge of urine. Upon examination, I found the mouth of the uterus more dilated; and I was enabled to determine that the presentation was a perfectly natural one; and the head lower in the pelvis. The pains were very powerful; the

* Baudelocque, &c.

head at length cleared the upper strait, and the vertex was about to turn under the arch of the pubes, but completely enveloped in the uterus—during a pain, the perinæum was much distended; the os externum, instead of yielding to the impulsive force of the uterus, rather closed, so that two fingers could not be retained at once. A seam, or cicatrice, formed a kind of barrier in the vagina; and the head, in consequence, was thrown to the right side of the inferior strait; where the parts were so extremely stretched, that I feared at each pain, the head would burst through them, in spite of every exertion to the contrary.*

From the oblique situation of the head with respect to the vagina, the os externum, instead of answering to the axis of the inferior strait, was mounted up directly to the pubes; consequently, the right side of the vagina, perinæum, and rectum, had to support the greater part of the force exerted by the uterus and its auxiliary powers. In order to counteract their influence, I supported the external parts with my hands; and made, during each pain, a strong pressure against the head; directing the woman, at the same time, to suspend her voluntary powers as much as possible.

Six hours were spent in this manner without advantage; the os uteri still rigid, hot, and but partially dilated; the os externum not disposed to yield, and the cicatrix as firm as ever. The head advanced, notwithstanding my efforts to prevent it; so that the vertex covered with the uterus had partly emerged from under the arch of the pubes. At this period it was extremely difficult to touch the mouth of the uterus; as it had receded towards the sacrum in proportion as the vertex had descended.

The soft parts were very hot and dry; and I began to entertain serious apprehensions for the patient. I was ten miles from the city, and no one was near on whose judgment I could rely. In this dilemma I had nearly resolved to divide the parts; believing it preferable to permitting the head to force its way through

* The cicatrix just spoken of, was formed by the healing up of an extensive laceration which the patient suffered in her former labour. It ran from the inferior termination of the left labium, to about the termination of the sacrum. I judged of the extent of the injury, by the cicatrix; and this could be traced to this point. Conversing upon this case, some time after, with the practitioner who had delivered her before, he confirmed my supposition. It was a long time before the wound healed; and the woman suffered much from the excessive and long continued discharge; but from this she recovered: and was, when I was called to her, apparently in robust health. She was about twenty-two years of age; of short stature, and rigid fibre.

them; which I began to consider as inevitable; when fortunately Dr. Physick's case of luxated humerus occurred to me. This determined me to try the effects of bleeding, ad deliquium animi. I represented to the friends of the patient the danger of her case; the possible result of the bleeding; and the inevitable one, did it not succeed. They agreed to the trial. I had the patient placed on her feet, while the midwife firmly supported the perinæum, &c. A vein was opened; and allowed to bleed, until she fainted.* She was now placed on her side in the bed.

On examining her, every thing appeared better: the external parts were perfectly soft and yielding; and the os uteri pretty fully dilated; but no pains succeeded, during the time I thought proper to wait; (which was half an hour, the patient continuing very faint all this time,) the parts being now in a proper situation for delivery, I introduced the forceps, and delivered a living and healthy child. The parts yielded very readily without laceration; and the woman had a rapid recovery.

1002. As cases of the kind I am now considering, are highly interesting, both from the extent of injury done to the parts, and their rarity, I trust I shall be excused for detailing another; especially as the mode of treating them is as certain, as it is novel.†

* The quantity of blood drawn was upwards of two quarts.

† Dr. Davies gives the credit of large bleedings in parturition to the late Dr. Rush. I feel that I am entitled to whatever praise or blame may attach to this practice. But this has been long since ceded to me by that gentleman, with all the frankness and liberality which so constantly characterized him. But Dr. Davies does not appear to understand the circumstances under which this practice is recommended. I infer this from his observations on the use of blood-letting, where rigidity is a cause of difficulty.

"For my own part," says he, "I can see no good reason for bleeding prospectively, or in anticipation of a mere possibility, which might or might not be realized by the event. To say the least of such a practice, it would appear to be a most unnecessary encroachment upon the ordinary dispositions of nature in the affairs of a function which she usually performs very safely and satisfactorily without any such interference."—*Elem. of Oper. Mid.* p. 89.

This passage would lead to the conclusion that I recommend (for it is not Dr. Rush,) this operation previously to any appearance of the necessity; which is far from being the case. This opinion is strengthened by what immediately follows: "Bleeding, on the other hand, as a remedy or a corrective of an actually existing rigidity of the soft parts, whether or not accompanied by more than ordinary constitutional excitement, is a power of great and unquestionable value," p. 90. Now, this is conceding all that I have ever contended for in the use of this remedy.

Case Second.

On the 12th September, 1798, I was requested to visit the wife of Samuel G., in consultation with Dr. Jones. I was informed by the doctor, that Mrs. G. had been in labour sixteen hours; the waters evacuated themselves early; her pains were frequent and strong; but there was not the least disposition in the soft parts to dilate.*

I examined the patient, and found the os externum scarcely large enough to admit the finger, and mounted against the symphysis pubis, in consequence of the perinæum being very much distended by the head of the child. The os uteri was rigid, and but little opened; a kind of bridle, or small column of flesh ran from the inferior edge of the symphysis pubis, and lost itself in the perinæum below; against this the head was firmly pressed. The head was situated naturally; and so far advanced, that the vertex was about to emerge from under the arch of the pubes, covered with the uterus; and had been in this situation six hours previous to my visit. All that had been done during this period, was the occasional exhibition of laudanum, with a steady pressure against the perinæum, to prevent the head escaping through it. In this situation of things what was to be done?

My ingenious and much lamented friend, Dr. Elihu Smith, of New York, upon the receipt of the history of the case just related, suggested the trial of an infusion of tobacco in similar cases, as a substitute for such extensive bleeding; affirming the effects were very like those produced by copious blood-letting; such as nausea, vomiting, syncope, and relaxation. I was pleased with the idea, and determined to employ it the first opportunity—the case under consideration I believed to be as favourable a one as could well occur; I accordingly proposed the tobacco infusion to Dr. Jones, who cheerfully consented to its trial.

* This patient, like the one whose case has just been related, had also suffered a laceration of great extent; the parts, after a considerable lapse of time, healed; but so unfortunately, as almost entirely to obliterate the vagina. I was called upon for advice; the woman's situation was truly distressing; the passage, or vagina, was so much contracted, as not to exceed in size a common writing quill; the parts extremely callous; and a continual and profuse discharge of acrid, fetid pus, kept her in a constant state of misery and ill-health. My friend, Dr. Physick, was also consulted at the same time: by a persevering use of sponge tents, &c., the parts became sufficiently dilated to admit imperfectly the venereal congress; soon after, she became pregnant; and the consequences of this pregnancy furnish the above case.

A strong infusion of tobacco, after several ineffectual attempts, was thrown up the rectum; it produced great sickness, vomiting, and fainting; but the desired relaxation did not take place—we waited some time longer, with no better success. In the course of an hour, or an hour and a half, the more distressing effects of the infusion wore off; but, resolved to give the remedy every chance in our power, we prevailed on the patient, with some difficulty, to consent to another trial of it; its effects were the same as before—great distress, without the smallest benefit; the parts remaining as rigid as before its exhibition.*

Supposing the bridle just spoken of, might have some influence on the development of the parts, I divided it, but without any evident good. We now proposed the remedy that had so completely succeeded in the former case—namely, bleeding nearly to fainting; to this the patient consented. We placed the patient on her feet, taking care to have the perinæum guarded, during the operation. Upon taking away about ten ounces of blood, she became very faint;† she was immediately laid upon the bed; and the most complete relaxation had taken place; the forceps were applied, and our patient was delivered in a few minutes of a fine healthy girl. The mother was comfortably put to bed; and every thing went on in the ordinary way until the sixth day; at which time, she was seized with a violent cholera morbus, and convulsions, (to which complaints she was subject,) and died in twelve hours.

This case, notwithstanding its unfortunate termination, fully establishes the influence of blood-letting in this very distressing kind of rigidity, and proves its action to be different from that of tobacco; though the latter produces sickness, vomiting, and syncope. I do not think the slightest blame can attach to the bleeding; as the woman was very well until the sixth day; when diseases to which she was subject, supervened, and carried her off.

* Dr. Blundell recommends an infusion of tobacco, where it is necessary to turn, and where the uterus contracts very strongly. We should not, however, join in this recommendation, from what we observed in the case now relating. As a dernier resource, it might be tried; but this must be at the discretion of the practitioner, and not from any recommendation of authorities.

† The subject of this case was a delicate woman, and wont to become very faint upon the loss of a little blood.

Case Third.

On the 26th September, 1800, I was called, in consultation with Dr. Ruan, to a woman in labour. She had been twelve or fourteen hours in travail with her second child.* The pains were frequent and strong; the waters had been discharged some time; the head was favourably situated, and completely occupied the vagina; the perinæal tumour large; the os externum, which did not exceed in size a finger ring, admitted the finger with some difficulty, in the absence of pain; during a pain it would be thrown up against the inferior edge of the symphysis pubis, so as not to admit the finger, or permit it to remain, if it had been previously introduced. Externally, a large cicatrix was found to run to the very verge of the anus; internally, it could be traced farther. This seam prevented the unfolding of the external parts so effectually, that the repeated efforts of the uterus for several hours were insufficient to make them yield, though the head had been closely applied to them for that period.

The patient was a strong healthy woman—considerable fever—the pulse strong, frequent and hard. I proposed bleeding ad deliquium, to which Dr. Ruan consented. A vein was opened immediately, and we took away about fourteen ounces of blood; but as the pains were very rapid, we were obliged to draw it while she was in a recumbent posture; no disposition to syncope was manifested. This quantity, however, had some effect, as there was evidently a disposition in the parts to relax, and an abatement of the severity and frequency of the pains. A second bleeding was determined upon, and to perform it while the patient was in an erect position. We effected this with some difficulty, but upon taking five and twenty or thirty ounces of blood more, she fainted—she was laid on the bed, and in a few minutes was delivered by the forceps, of a fine healthy boy—the patient recovered rapidly, without accident. About three years after, I again delivered the same person by the same means.

Relative Rigidity.

1003. I have maintained, that not only the different parts of the uterus into which it is usually divided, may act separately

* With the first she had suffered an extensive laceration of the perinæum.

and independently of each other, but that even the different sets of fibres of which it is composed may do the same; hence that peculiar rigidity I have denominated "relative;" by this we are to understand that the circular fibres act with a force superior to the longitudinal. This may happen from the latter losing a portion of their strength, which will necessarily give to the circular a relative superiority of force; or, it may happen that the circular fibres, from some cause or other, may have an increase of power, which will, of course, make the longitudinal relatively weaker. Whichever way it may take place, the result is the same, for the labour will become stationary.

1004. This case may be known by labour coming on kindly, but after a certain period, gradually diminishing in force, by the mouth of the uterus having a disposition to dilate; by its thickening; by the presenting part not protruding during a pain; by pain extending itself over the whole abdomen; by a sense of suffocation; by a hard, full, depressed pulse; by the irregularity of the pains, both in force and frequency: the mouth of the uterus, in this case, cannot open agreeably to the order of nature, as the fibres destined to keep it shut, are relatively stronger than those intended to open it.

1005. In consequence of this transfer, or peculiar disposition of the power, the longitudinal fibres contract more feebly and transitorily; the mouth of the uterus does not dilate, though not preternaturally rigid; the abdominal tumour does not continue to subside; there is a secretion of mucus, and a disposition in the external parts to relax; but the os uteri cannot dilate until the longitudinal fibres have shaken off their torpor, or, in other words, not until the cause of this torpor is removed: when this is done, they resume their healthy contractions, and the labour, for the most part, is quickly terminated.

Case.

Mrs. W——, June 10th, 1805, was taken in labour with her tenth child: her pains began smartly, but soon ceased almost entirely—she continued in this situation from ten o'clock in the evening until six the next morning; at this time I was called. I found her with nearly all the symptoms above enumerated; she was bled twenty ounces; pains came on immediately, and she was quickly delivered.

Sect. IV.—*Tonic Rigidity; or Rigidity from the Premature Escape of the Waters.*

1006. This only takes place after the waters have been a long time discharged—the tonic contraction of the uterus then becomes powerful, and its force will be in proportion to the healthy disposition of this organ; and the time which may have elapsed since the waters were drained off. I have already remarked upon this disposition of the uterus when freed from its contents, and stated its high and important uses, to the woman at the time, (251;) I have also referred to the inconveniences to which it sometimes gives rise, when speaking of the causes of preternatural labours, and given a case illustrative of it, (678.) Cases of this kind have frequently occurred to me; but in some I have been obliged to turn after bleeding, (which was impossible before,) and in one or two others I have been obliged to use the forceps.

1007. There is a kind of rigidity, or, more properly speaking, a cartilaginous or scirrhous condition of the neck or mouth of the uterus, which is so confirmed and indurated, as not to yield to the powers of the body and fundus, nor to blood-letting, however far it may be carried. These cases, fortunately, are very rare; so rare, indeed, that I have never met with an instance of the kind. They are, however, recognised by Baudelocque and other writers.

1008. Baudelocque says of them, "Sometimes the pad which constitutes the neck of the uterus, in the latter periods of pregnancy, and in time of labour, is hard, scirrhous, incapable of any extension or dilatation, so as entirely to hinder the exit of the child. After a convenient delay to ascertain that the efforts of nature cannot overcome the resistance, and the administration of proper methods to relax it, it must be cut in several places, as some practitioners have done. These incisions are preferable to rents which might take place in it, and have never been attended with the same consequences. They must be made more or less extensive, according to the pad, which is callous: but always so much so, that the orifice may afterwards open sufficiently."*

1009. The success of this plan has been verified, in this country, as the case of Dr. Thomas Archer most satisfactorily proves. Dr. A. was called to a woman in the thirtieth year of her age,

* Vol. III. p. 205.

and in labour with her first child. The os uteri was found to be very little opened, "and forming a thick cartilaginous ring, which neither yielded to nor was softened by the pains." After ordering a bleeding to some extent, to be purged, &c., he took his leave, and left her to the midwife who had charge of her. He did not see this patient again until late in the following day. Soon after his arrival, the uterus, loaded with its contents, was pushed through the os externum. The child was dead, he thought, beyond doubt, and had most probably been so for ten days. As the case appeared to him hopeless, and as it was not in his power to procure a consultation, he resolved on making incisions in the mouth of the uterus; he accordingly, by means of a common lancet, made three cuts in the uterine circle; one anterior, one posterior, and one laterally. The incisions were each about two inches long. The pains, though not strong at this time, were sufficient, however, to expel the child almost instantaneously. The woman was put to bed, and no unpleasant symptom followed.*

1010. In addition to this case, and as confirmatory of its success, we may mention those of Moscati. A woman whose os uteri had suffered from a previous labour, was found at the time of her second, to be so restricted and dense as to require an operation. This was performed by making several incisions in the circle of the os uteri, which dilated after a time sufficiently, and without farther injury, to permit the child to pass—this operation was repeated upon another occasion on the same woman with similar success. This method Moscati thinks better than that recommended by Smellie, and appears to consider it original.† But the above case will show that Dr. Archer had performed this very operation long before, and with equal advantage.

Sect. V. and VI.—*Over-distention of the Uterus, and the Membranes too Dense, as a Cause of Tedious Labour.*

1011. In many cases of this kind, a well directed interference may very much abridge the duration of suffering; but when and how to interfere, with success, can only be known, by those who possess correct principles, and have had long experience. Thus, Mr. Burns tells us, and to the success and truth of which we

* Med. and. Phys. Jour. Vol. I. p. 157.

† See Bulletine Universal, &c. No. 6. July, 1827.

can bear ample testimony, "that in many cases a very moderate resistance retards the expulsive process, and renders the pains irregular or inefficient. And I know by experience that the membranes may be so tough as not readily to give way, and in this case the pains become less effective, and the labour is protracted till they be opened. Whenever the resistance is removed, the pains become brisk and forcing"

1012. Of cases of this kind, we have seen many; but one of the most remarkable happened in September, 1826. Mrs. ——, at the full period of her pregnancy, as she calculated, was attacked on the eighteenth of August, with severe alternate pains, which caused me to be sent for. These pains were excessively severe; but without either force or regularity. There was no secretion of mucus, nor was the os uteri dilated, though soft, and the whole of the inferior portion of the uterus was excessively distended and very thin. Dr. Campbell says, (Intr. to the Study of Mid. p. 215,) "Although over-distention of the uterus is a cause which most systematic writers have allowed, yet we have no distinct evidence of the existence of such a state; it is, I suspect, purely presumptive." We can assure Dr. C. that this is not so; notwithstanding his attempt to reason us out of the belief of his statement; on this point, as regards the economy of the gravid uterus, which he appears to think sufficient to disprove this condition of the uterus, is based upon a presumption, according to his own words. For we can see very little against the occurrence of such a state of the uterus. For, if we admit his postulate, that the system furnishes materials in proportion to the necessity for the increase of expansion, he must admit that this just proportion is only exactly so, when the enlargement of the uterine cavity is in a normal condition. Has not Dr. C. known dropsy to take place within the cavity of the uterus, and has not the uterus yielded to the influent serous deposition; and this, to a great extent, without provoking uterine contraction to force it off. Dr. C. takes it for granted that the os uteri becomes considerably dilated in the early stage of labour, and advances the contents of the uterus considerably in the pelvic cavity; a circumstance, we have said above, that does not take place, even after long-continued, reiterated, and very painful contractions; consequently, the uterus is not relieved by forcing the membranes with their water low in the pelvis, and thus causing the uterine fibres to act with the "necessary force." The case just now relating, will, we think, satisfy any unprejudiced mind, that the

suffering and cause of delay were owing to a superabundance of liquor amnii. After waiting several hours, not the least alteration was observed, though the pains had continued with much severity. I ordered a gill of water and a drachm of laudanum to be given as an enema. This application completely tranquillized the pains for many hours; they, however, returned with as much violence the day following; and were again relieved by the same remedy; nor did they return until the 21st of September, nearly five weeks from the first attack.

1013. This second attack was every way similar to the first, with the addition of an acute pain in the right side, which was augmented by coughing, or a full inspiration. Twelve ounces of blood were drawn; the bowels freely opened by Epsom salts and calcined magnesia; and the diet and drink restricted to barley-water. The condition of the uterus was very much the same as it was when examined on the 18th of August. The bleeding and purging afforded much relief, by removing the pain from the side; but there was no abatement of the uterine action, or pain; for such it certainly was, as the whole uterine globe was found firmly contracted or hardened at each pain. The laudanum enema was repeated with the previous good effect, and my patient remained quiet until the day but one following, namely, the 23d, when there was again a renewal of the previous symptoms, which were again removed by bleeding, purging and laudanum. On the 24th, the same sufferings were endured; and relieved as before. On the 25th, my patient was again seized at the hour with the same symptoms, together with great feebleness, and almost constant disposition to syncope. The pains were occasionally severe, but far apart; not at all protrusive; and each was followed by nearly complete syncope.

1014. The situation of my patient seemed now to call for some efficient relief, or she must succumb. As the uterus was very thin and much stretched, and the os uteri was pliant, though not dilated beyond three-quarters of an inch, I thought it would be best to rupture the membranes, and give an opportunity to the uterus to contract, and, as I believed, remove the disposition to syncope: this was accordingly done; and it gave issue to an immense quantity of liquor amnii. My patient received immediate benefit from this operation; the sensation of distention was relieved, and the faintness was instantly removed. In about half an hour, the pains became efficient, and the os uteri began to dilate; and in about an hour and a half, my patient was safely de-

livered of a large male child. No after-inconvenience was experienced.

1015. This case is remarkable for the numerous unsuccessful efforts the uterus made to disembarrass itself, and the severe sufferings the patient underwent during these efforts; and may with as much certainty as almost any with which I am acquainted be looked upon as a protracted case of gestation.* The patient considered her term as having fully expired on the 18th of August; the period at which pains first manifested themselves; and as far as the usual mode of reckoning, and the complete development of the uterus at that time can be relied on, incline us to the belief that she was correct; and that she really had arrived at ten months and a week, complete when delivery took place.

1016. I can anticipate nothing, even at this moment, but a disastrous issue, had I neglected to rupture the membranes; as several very distressing as well as alarming symptoms, had begun to show themselves; such as a cold, clammy skin; a small, frequent pulse; laborious breathing, and great proneness to syncope; all of which were instantly removed by taking off the distention of the uterus, by giving an opportunity for the liquor amnii to escape by rupturing the membranes. This case must not be confounded with the *Hydroamnios* or a dropsy of the ovum, one of the few diseases to which it is liable. It is almost always caused, as far as my experience goes, by a latent venereal taint on the side most frequently of the father, and this, for reasons that will immediately present themselves. In these cases the woman rarely goes to the full period of utero-gestation—for the fœtus is sometimes expelled as early as the sixth month, and rarely goes beyond the beginning of the eighth. It is usually found to be dead, or so weak as to die very soon after birth. In some instances the liquor amnii is so abundant as to give the woman the appearance of being at the full time, though she may not have exceeded the seventh month. We have had several such patients under our care—in one of these seven dead children were delivered in as many consecutive pregnancies. This case, with several similar, the uterus, &c., were restored to the healthy performance of their duties, by mercury, and sarsaparilla, in the unimpregnated interval.

* See Chapter "On the term of Utero gestation."

CHAPTER XXXI.

HEMORRHAGE FROM THE SITUATION OF THE PLACENTA OVER THE MOUTH OF THE UTERUS.

1017. I shall confine my observations on the subject of uterine hemorrhage in this place, to the "unavoidable species" and to those discharges of blood which follow the birth of the child; and will refer my reader for an account of such as precede delivery, but in which the placenta is not situated over the mouth of the uterus, to my work on the Diseases of Females.

1018. The first evidence of the placenta being over the mouth of the uterus, may declare itself so early as between the sixth and seventh months of utero-gestation. At this time, the neck of the uterus begins to unfold itself for the more complete accommodation of the fœtus—in consequence of which, a small portion of the placenta will sometimes be separated from the uterus; this of course, will be followed by a discharge of blood, commensurate with the extent of the lesion, and the size of the vessels involved in the separation.

1019. This discharge may sometimes, by proper management, be made to cease, and not to return until the uterus and placenta are again forced to separate—then, another slight hemorrhage ensues, which may also cease; and not be renewed, perhaps, until the last period of pregnancy; or there may be, as happens sometimes, a constant stillicidium of a bloody sanies until the last period of gestation. Dr. Rigby, who is considered the highest authority upon this subject, seems not to have bestowed as much attention to the condition of the patient before the full period of utero-gestation, as he did to the consequences after that time had arrived, or he would not have held the doubtful language he did when speaking of the "time and manner" in which the "accidental" and the unavoidable hemorrhage came on: he says "*probably* that which is occasioned by the placenta being fixed to the os uteri, will, for the most part, not come on till the full term of parturition, when the uterus begins to dilate from the approach of labour; which is contrary to the account I have just given, (1018, 1019,) as well as the experience of almost all the wri-

ters* upon this subject. Besides, the very economy of the uterus makes the account I have given of this accident, correct.

1020. It must not, however, be supposed I insist, that the woman will *necessarily* be subject to these anticipated discharges; I only wish to be understood, that she is *unavoidably liable to them, from the mechanism of uterine expansion.* The obliteration of the neck of the uterus is not purely a mechanical operation; for it unquestionably suffers an organic development at the same time; and much will depend, as regards the appearance of hemorrhage before the full period of utero-gestation, whether the mechanical or physiological process shall prevail. Thus, if the neck of the uterus be mechanically operated upon, and made to yield faster than the organic development can follow, a portion of the placenta will be detached, and a discharge of blood will follow. When this takes place, the orifice of the uterus will be found thinner than usual; and the os uteri rather more open; and this happens, perhaps, more frequently than otherwise, if my observations be correct; that is, I have witnessed more cases of women who have had anticipating discharges of blood than those who were exempt from them.

1021. I am aware this does not correspond with the cases given us by Dr. Rigby—agreeably to his records, nearly two to one had no previous discharge. While Baudelocque tells us, that the discharge "sometimes appears as early as the sixth month: sometimes not until the ninth, or even till the approach of labour; but *generally*, from the seventh to the eighth month." When it does not appear before the full period of utero-gestation, it must be owing to the growth of the placenta keeping pace with the organic development of the neck of the uterus; or, in other words, where the mechanical agency is inferior to the physiological counteraction. When this condition obtains, the neck of the uterus is larger, and its parietes thicker than common; indeed, it has been thought by Duparque, that it is not entirely developed even at full time under such circumstances, and that it is on this account that the hemorrhage does not appear until the approach of labour. For he appears to believe, in cases of the implantation of the placenta over the mouth of the uterus, that the neck of this organ does not develope itself as in ordinary cases of pregnancy; and endeavours to prove this, by saying, he opened the body of a woman who was in her ninth month; the neck of the uterus was very thick, and projected four lines; that he intro-

* See Leroux, Kok, Baudelocque, Denman, Burns, &c.

duced his finger with difficulty in the opening, and experienced the like resistance when he attempted to pass it from the cavity of the uterus outwards. Now, this proves nothing more than, in that case, the development was not complete; which certainly cannot establish the fact he wishes to prove, namely, that in all cases of unavoidable hemorrhages, the neck of the uterus is less expanded than when the placenta is attached to some other portion of this organ than the neck.*

1022. It is not difficult to believe, that the neck of the uterus, in the cases under consideration, is found sometimes thicker than it ordinarily is, at full time: because, in most instances of placental presentation, we believe, that hemorrhage takes place before the exact period of gestation is completed. Our reasons for thinking so, are, 1st. That in common cases, which arrive to their full term, but where the placenta is attached elsewhere than to the mouth, the mouth of the uterus is found to be a flat, plain surface; and either altogether closed, or but little opened, and the edges constituting it, thin. 2d. Because this species of hemorrhage is seldom attended with pain in its commencement; and sometimes not at all; which would hardly be the case, were the uterus completely developed; and the flooding be the consequence of an entire development, and the absolute commencement of labour.

1023. Therefore, when the full time arrives, the woman may be surprised by a sudden, and an alarming issue of blood, without the smallest premonition—for it sometimes makes its approach so silently and so rapidly, that the patient may be attacked in the midst of her domestic duties, or while in the enjoyment of company. At other times it is preceded by slight and distant pains;† and when this is the case, the discharge, for the most part, is neither so sudden, nor so alarmingly extensive; for hemorrhage is never so overwhelming nor appalling, as when the

* Jour. Gen. de Med. Vol. 29.

† When this species of flooding is accompanied by pain, it will in general be found that the waste is neither so sudden nor so profuse, as when none attends; though each contraction of the uterus augments, for the time being, the hemorrhage. It must, however, be observed, that in proportion to the discharge, will be (cæteris paribus,) the diminution of the uterine force—and hence the infrequency of natural deliveries in this kind of flooding. Indeed, the pain seems almost to cease; or, in other words, the contractions cease almost as soon as they commence; for a certain fulness of blood in the uterine vessels, seems essential to healthy contraction.

os uteri silently and rapidly yields, and in an instant exposes a thousand bleeding vessels.*

1024. The blood flows in an almost unceasing stream, till the woman becomes much weakened and faint; coagula may then form, and a temporary truce ensue, but this in general is treacherous, and of short duration; especially if pains attend; for the coagula which had partially arrested the hemorrhage are now driven away by the contractions of the uterus, or by the operation of some other cause, as accidental as unavoidable, and the discharge is renewed with, perhaps, even increased violence; and in this way may things proceed, until the patient is either exhausted by the waste of blood, or is relieved by the judicious and successful interposition of art.

1025. When the discharge is so excessive and sudden as I have just described it to be, no time should be lost before it is ascertained whether the flooding proceeds from a separation of a portion of the placenta remotely situated from the os uteri, or from this mass being placed over it—the symptoms which designate these different situations, though, perhaps, pretty strongly marked, are, nevertheless, not sufficiently accurate, to render a more certain and decided examination unnecessary.

1026. We should, therefore, upon such occasions, always examine the mouth of the uterus with great care. In conducting this, the finger merely introduced into the vagina, will rarely inform us with sufficient accuracy; the hand should be conducted into this canal, that the utmost freedom may be given to this important examination. A proper moment, however, should be chosen for this purpose, that no evil may result from the operation; for I have just remarked, that a suspension of the discharge is sometimes effected by a coagulum within the vagina or mouth of the uterus, which being removed in making the examination, may renew the flooding; while the blood is flowing is, therefore, the time to make this attempt.

1027. When the hand has possession of the vagina, a finger must be carried within the os uteri; it should then carefully and with certainty, determine the nature of the substance presented

* This circumstance, however, rarely obtains, but where the woman has arrived at, or very near, the full term, and where she has been teased by some previous discharge. May not the pretty constant, though inconsiderable discharge just noticed, contribute to this sudden dilatation of the os uteri, by acting as a uniform local depletion?

to it; if it be the placenta, it can be distinguished from a coagulum, (the only thing to which it has any resemblance,) by the following characters: 1st. The placenta always presents to the touch the sensation of a fibrous structure of pretty considerable firmness. 2d. When this is pressed upon by the extremity of the finger, a sensation of tearing an organized mass is excited. 3d. It being much firmer in its consistence, and offering more resistance to the play of the finger within it, than a coagulum. 4th. Its not escaping from the finger, when its substance is in some measure broken down by the pressure and free movement of it—it can never be mistaken for the membranes.

1028. In a case of such importance, we should neither permit a false humanity, nor a false delicacy to get the better of an imperious duty; for upon the early knowledge of the species of flooding, the woman's life may unquestionably depend. We should, therefore, without reserve, state to the friends of the patient, our opinion of the nature and tendency of her case, and the importance of ascertaining it, by a proper examination. This will almost always be acquiesced in; and, if it be properly conducted, it will neither excite severity of pain, nor wound the most fastidious delicacy. The hand, for the most part, from the relaxation consequent upon a continued discharge, will pass without much difficulty; or it may be made to do so, by proper lubrication.

1029. It is true, indeed, with a first child, and at an incomplete period of utero-gestation, there may be some difficulty in passing the hand, if the discharge has not been pretty abundant—but in this case, the examination is not so immediately important: should it, however, be so, from the excess of the hemorrhage, the parts will then be found almost always sufficiently yielding to permit the passage of the hand without much difficulty. The directions just given for ascertaining the particular nature of the hemorrhage, I am persuaded should never be neglected, as an attention to them will save a vast expenditure of blood in all cases, and in some life itself.

1030. Having ascertained it to be a placental presentation, the condition of the mouth of the uterus should next be carefully examined—the degree of opening, and its disposition or indisposition to dilate, should be marked, for on this much depends. It will be found in one of the following situations: 1st, but little opened and very rigid; 2dly, but little opened, yet disposed to dilate; 3dly, opened to some extent, but very unyielding; 4thly, opened to the same extent, but soft; 5thly, fully dilated.

1031. The nature of the case being thus ascertained, the mode of treatment is next to be considered. This will necessarily be much influenced by the particular condition of the woman, and the period at which the discharge may show itself, and its quantity make interference necessary. I have already noticed, that when the placenta is situated over the mouth of the uterus, slight discharges of blood may take place after the sixth month, as a consequence of the economy of the uterus (1018) at this period: when these are moderate, they may, for the most part, be arrested by the means usually employed for flooding, when the placenta is not placed over the mouth of the uterus; they should therefore be put into immediate requisition, and the patient placed under the strictest injunctions of obedience, and conformity to directions.

1032. For a discharge of blood at this period is always to be looked upon as liable to extreme augmentation; and we should never lose the suspicion, that it may arise from the peculiar situation of the placenta. We have no certain means by which the "accidental" may at this time be distinguished from the "unavoidable," unless it be by a careful examination—but this is never necessary so long as the flooding is moderate. I think, however, I have observed in the "unavoidable," that the flow of blood is more sudden and copious in a given time; and that it is more fluid and florid than in the "accidental." In the commencement, the "unavoidable" is never accompanied by coagula; and when pain attends, the discharge is always increased at each contraction. But in cases demanding precision, these marks cannot be relied upon. From the proximity of the bleeding vessels to the os externum, the blood will issue so quickly from them, as to appear both more fluid and more florid, than in the "accidental," species; for in the "accidental," the blood may escape remotely from the os uteri, and be obliged to travel slowly through the meshes of the connecting medium of the ovum and uterus; and hence will appear less florid and fluid, and be more disposed to coagulate than in the "unavoidable."

1033. But coagula will form in the "unavoidable," when the discharge is about to cease, either by proper treatment, or by the mere efforts of nature, and it is in this way that a stop is put to farther waste.

1034. As we cannot determine the situation of the placenta without much pain and force, before the full period, when the flooding is moderate, it may always be well to treat both kinds

as if they were cases of placental presentations; as in doing so we shall be erring on the safe side. We should insist upon the most perfect tranquillity, and a constant confinement to the horizontal position whenever practicable. Blood at this period may be taken from the arm, if the arterial force be too great; cold applications should be resorted to; and the sugar of lead be exhibited in sufficient doses, either by the mouth or by enemata as already advised. Kok and others recommend cold astringent injections into the vagina: of the utility of these I have much doubt—at least, I have never been tempted to employ them. I rarely pay any attention to the state of the bowels, unless they be very costive—then a mild, warm injection of molasses and water, or soap and water, will be every way sufficient. I am thoroughly convinced that much mischief is sometimes done by the exhibition of even the very mildest purgatives; and the reason will be immediately obvious, when we consider the effects of them. I have frequently permitted my patients, under treatment for uterine hemorrhage, to be five or six days without a discharge from the bowels; and when I thought it necessary to stir them, it has been, for the most part, by means of mild injections.

1035. Kok also advises the introduction of some substance, such as lint or rags, into the vagina, well imbued with a fluid styptic, such as a strong solution of alum, or of wine in which alum is dissolved. I should place more reliance upon this latter means than upon the former; as it would in some measure act as a tampon, and serve as a *point d' appui* for coagula to form upon; for at last we must have these form, if the hemorrhage stop without having done much mischief.

1036. I have advised bleeding when the pulse is active; Kok says, this is useless, if not injurious, in this kind of flooding. In this I cannot agree with him; and for the following reasons:—1st. Under any kind of active hemorrhage, when the pulse is vigorous, the taking away blood from the arm has uniformly been found useful, by producing contraction by unloading the vessels to a certain extent; and more especially, in diminishing the velocity of the blood within them. 2dly. As, at the period we are speaking of, we cannot decide with certainty without manifest violence, from the contingencies just mentioned, that the discharge is from the peculiar location of the placenta, we may act, as far as the bleeding is concerned, as if it were an "accidental" hemorrhage; especially as the blood detracted will not seriously

weaken the woman, and as there is a strong probability that it may be arrested until the last period of pregnancy by proper applications and treatment. 3dly. That at this period the hemorrhage is for the most part owing to a mechanical separation of a portion of the placenta; but which will not generally be renewed for some time, as the separated vessels, and the other connecting media, possess considerable elasticity; therefore time will be given for the formation of coagula, provided the proper means be pursued to favour their production; among which we must reckon bleeding. 4thly. If the discharge be not produced by external violence, or any other cause which will certainly excite the action of the uterus, there is a strong probability, that it will cease for the time being; unless it be improperly treated, or unnecessarily provoked.

1037. Should the body and fundus of the uterus be excited into action from any cause, at this period; and the discharge be rather the effect of such contractions, than the natural and unavoidable stretching of the neck of this organ, we have great reason to fear, that we shall not be able to suspend these efforts, so as to enable the woman to go the full term of gestation. But should we ever have this intention in view, as it may sometimes be happily fulfilled; and if it be not, it is decidedly the most proper mode of treating the complaint.

1038. In such cases, we should endeavour as quickly as possible to interrupt uterine contraction; for this purpose, we should bleed under the restrictions just mentioned; we should exhibit the sugar of lead with laudanum, as frequently as the exigencies of the case may require; and by enemata, I think, is much the most prompt and efficacious mode of administering them. From a scruple to half a drachm of this salt, with a drachm of laudanum, and a gill of water, may be thrown up the rectum every hour, or more seldom, as occasion may call for them. All the auxiliary plans I have already recommended should be put in requisition, and their full adoption rigidly enforced.

1039. Should these means moderate the discharge, and the blood be found disposed to coagulate; and if at the same time uterine contractions have ceased, or even considerably diminished, we may be encouraged to persevere in the use of these remedies, and entertain an expectation of ultimate success. The introduction of a moderate-sized tampon of sponge at this time, as a mere *point d'appui*, is highly useful; for, without some such

support, the coagula may be discharged, and the hemorrhage renewed.

1040. The artificial support for coagula, which I have recommended above, (1039,) is of more consequence than we would at first imagine. It permits the thinner parts of the blood to escape through the meshes of the sponge, by which means the coagula are rendered more firm and tenacious; besides diminishing, by a counter action, the influence of the vis à tergo, which is constantly operating to throw them off.

1041. I am aware, that some rely upon the coagula without the tampon; and I must admit, that they have occasionally been sufficient to save the woman's life; a case of this kind is related by Leroux;* but he expressly declares they are not to be relied upon. The sudden movement of the woman's body, for even necessary purposes; uterine contraction; the escape of the waters, &c., may all serve to disturb the coagulum which has arrested the hemorrhage. But the most important use of the tampon under these circumstances, remains to be mentioned; which is, that it causes the coagulation of the blood, merely by presenting a surface favourable to this change, long before this disposition would spontaneously show itself; for in general, this effect is not produced, but when the woman is much exhausted, or by the rather tardy, though successful influence, or the remedies previously employed.†

1042. Should our endeavours, however, fail to arrest the discharge, we should, without farther loss of time, ascertain the condition of the os uteri, and then proceed precisely as if the woman had arrived at her full time when the hemorrhage commenced; for it will now be found that the cases are reduced exactly to the same condition, and will require the same mode of management; of which I shall speak more at large presently.

1043. A woman may escape these anticipating discharges until she complete her full term; but at this time it will be seen that the uterus cannot expel its contents without *necessarily* exposing the patient to the most imminent risk. So alarmingly profuse, and so decidedly dangerous are these discharges in some instances, that a few minutes are sufficient to exhaust the strength, or to deprive the woman of life.

* Observations, p. 258.

† Mr. Burns assures us, he never saw a case which required delivery during the first paroxysm, if a proper treatment had been adopted.—*Principles of Midwifery, 5th. ed. p.* 323.)

1044. I once witnessed a case in which there was discharged from the uterus, in the course of about fifteen minutes, a full half gallon of blood; and was sent for in another instance, where the woman had expired before my arrival, though there had not, as the midwife assured me, more than half an hour passed from the commencement of the flooding to its fatal termination. These are, however, extreme cases, yet they show how suddenly and certainly they may be fatal. It is confessed, on all hands, that no accident attendant upon conception is equally menacing as the unavoidable hemorrhage; and it also emphatically declares to the physician, that much depends upon him that it shall not be very often fatal. It is one of those extraordinary cases, in which nature does less for the preservation of the individual, than almost any other.

1045. This does not arise so much from want of exertion on the part of nature, if I may so term it, as from the almost entire incompatibility of giving birth to the child, and protecting the woman against flooding, at one and the same time. Yet we learn, from such authority as cannot be doubted, that the woman, left entirely to herself, will not always perish. The means, however, which nature employs to procure this immunity offer neither a useful practical hint, nor the smallest inducement to imitate her; for they are so entirely contingent, and sometimes so long withheld, that the woman, from her great exhaustion, can scarcely be said to profit by the interposition.

1046. Baudelocque* says, the woman may be preserved "when the orifice is fully dilated, and the mass separate entirely from it, and be so far removed from one side, that the membranes may present. The membranes may then tear spontaneously, and delivery be performed naturally, if the woman, notwithstanding her loss of blood, still preserves sufficient strength, as has sometimes happened." Leroux,† by the formation of coagula, and the spontaneous action of the uterus. Smellie,‡ to the entire separation of the placenta, rupture of the membranes, and the placenta being first delivered, &c. &c.

1047. From this it would appear that in some rare instances the woman has been saved by the natural agents effecting the delivery before she was too much exhausted; but we do not profit by the knowledge of the manner in which this was performed.

* System of Midwifery, Vol. II. par. 986.

† Observations, &c., p. 306.

‡ Midwifery, Vol. II. Col. 18, No. 3. Cases, No. 3, 4, 5, 6, 7.

It is, therefore, now completely established, that the only chance the woman has for life, is by a well-timed and well-conducted delivery in every case, (*cæteris paribus*,) of placental presentation.

1048. Though it be universally admitted that there is but one mode of proceeding in the case we are now considering; yet it is not so generally conceded that the success of that mode essentially requires that the delivery be properly timed, and as properly conducted. All who have written upon this subject, seem to agree in one of the positions; namely, that delivery is absolutely necessary; but many, and, indeed, I may add too many, have been regardless of the conditions which serve to render this operation availing.

1049. The success of the operation of turning for the relief of this species of hemorrhage, must depend upon its being performed under the proper conditions of the mouth of the uterus. We have already insisted on this when treating of "turning," therefore, shall not repeat here the rules we laid down as essential to success, whenever this operation is performed.

1050. The time *when* we shall attempt delivery is of the greatest moment, and deserves particular investigation. Dr. Denman says, "It would be of great advantage in practice, if some mark were discovered, or some symptom observed, which would indicate the precise time when women with hemorrhages of this kind ought to be delivered;" but declares, "we do not at present know any such mark." Yet almost immediately after decides, that "whenever the case demands the operation, on account of the danger of the hemorrhage, the state of the parts will on this account always allow it to be performed with *safety*, though not with equal facility."

1051. If this be true, we are certainly in possession of what Dr. D. thought so great a desideratum—for if the parts be in condition to turn with *safety*, it is certainly all that is required, when "the danger of the hemorrhage demands the operation." For if the parts permit turning without risk, they must be in a dilated or a dilatable state, and this is all that is, or can be required when the condition of the flooding "demands the operation." Then we have a rule which is never failing, when this condition of the parts obtains, if it be true that this can always be done with *safety*, if not with equal facility.

1052. Now, it is of importance to inquire whether turning can always be performed with *safety* when the parts are in a condi-

tion to permit it; for upon this much depends. It would seem, agreeably to this position, that the whole risk the woman runs in these cases, arises from the "state of the parts" opposing the introduction of the hand; and when they do not, that turning may then be performed with *safety*—experience, however, constantly contradicts this unqualified opinion, for the woman may be so far reduced that she may expire before the operation is completed, or very quickly after.*

1053. Besides, the manner in which we find the opinion stated by Dr. D. would lead to the persuasion, that so long as the os uteri was not opened, there could be no danger, whatever might be the quantity discharged, than which nothing can be more unfounded. For it is a well-known fact, that the powers of the uterus may be so far impaired as not to perform this office, even at the last moment of existence. In this I am supported by Rigby,† who declares, that were "this rule invariably adhered to, in some cases, it would be attended with danger, as we might wait for the opening of the uterus till it was too late to relieve the woman by turning the child."

1054. This will be very readily understood, when it is recollected, that the opening of the uterus mainly depends upon the longitudinal fibres acquiring the mastery of the circular; but when the uterus is so far exhausted of contractile power as to remain passive, or nearly so, we shall always find the os uteri closed, (unless previously distended by an exertion of its powers,) though it may be most easily *dilatable*. I may perhaps even acquiesce in the explanation of Dr. Rigby‡ upon this subject, who supposes that the position of the placenta may serve to keep the uterus closed by surrounding its mouth, by the attachment of its fibres to this part, which is now perfectly passive and unresisting—this is both ingenious and probable.

1055. I must now make a distinction of great practical importance, that has never, so far as I know, been pointed out; which, if it be just, (and my experience gives me every reason to believe it is,) will in some measure serve to reconcile the con-

* Of this we have ample proof, in cases 58, 81, 82, 89, 98, &c., of Rigby, in each of which the condition of the parts *easily* permitted turning, but not with *safety*. But I am clearly to be understood that I attach no censure to the operation; for I am of opinion it was the only thing that could be done to give the woman a chance—and I have no doubt, it was properly performed. But these cases go to prove the incorrectness of the position I am now examining.

† Essay, 6th ed. p. 40.

‡ Essay, 6th ed. p. 40.

flicting opinions of writers upon the subject of the *time* when it would be invariably proper to attempt the relief of the patient by turning—it is simply this, that there is a most material difference between the dilatation of the os uteri, or even its dilatability, when effected by the natural powers of this organ, and that passive or quiescent condition, which results from the languor of death.

1056. The one is the result of its organization, when its powers are not too much impaired or prostrated by disease; while the other is a syncope, if I may so term it, produced, when these powers are exhausted by an excessive waste of blood. This distinction must constantly be kept in view; for on it depends the rational mode of treating this formidable complaint: for if it be not, we prescribe both uncertainly and empirically. An attention to the one leads us to husband with the utmost care the strength and vigour of the patient; while the other makes us regardless, if not prodigal of it; the one is almost always crowned by success, the other leads almost constantly to a doubtful issue.

1057. We can readily account, with this distinction in view, for the difference of success in the operation of turning. When performed after the dilatation of the uterus has been effected by the natural agents, it has perhaps almost always been attended by the much desired issue; but when performed after the flaccidity of approaching death had ceased to make it difficult, it too often has been followed by the loss of the patient. Under this impression, I should say, that when the os uteri was either dilated or rendered dilatable by the operations of this organ; and before the strength of the patient was materially impaired, that then, and then only, was the desirable time to operate; but if circumstances prevent advantage being taken of the proper moment, and nothing but a choice of difficulties remain, we should certainly attempt to snatch the woman from her impending fate; but this should be under the cautions already suggested.

1058. I will attempt to put this subject in a clearer point of view, by considering what ought to be attempted for the relief of the patient under each of the conditions of the uterus pointed out above, (1030;) and which necessarily comprehends every state of which it is at this time susceptible.

SECT. I—1. *Where the Uterus is but little opened, and is very rigid.*

1059. In the condition of the uterus here designated, all the evils which can attend the forcing of a rigid os uteri, would take place by an attempt to deliver; it should, therefore, not be thought of. Indeed, this has ever been a subject of great embarrassment to writers upon this subject; and makes them in many instances at variance with themselves; or they give their directions so obscurely, and so hesitatingly as to confound the judgment of the young practitioner.* It has given rise to two modes of proceeding, each of which is equally wrong.

1060. The first is to force the uterus, however rigid, provided a finger can be introduced. I have already said much upon this plan, and shall only add in proof of it a quotation from Dr. Rigby† every way illustrative of the impropriety of this outrageous practice.‡ "In recommending early delivery, I think it right, however, to express a caution against the premature introduction of the hand, and the too forcible dilatation of the os uteri, before it is sufficiently relaxed by pain or discharge; for it is undoubtedly very certain that the turning may be performed too soon, as well as too late, and that the consequences of the one may be as destructive to the patient as the other. I am particularly led to observe this, as I have lately been informed, from very good authority, (namely, a gentleman to whom one of the cases occurred,) of three unhappy instances of an error of this sort, which happened some years ago to three surgeons of established reputation, who, from the success they had met with in delivering several who were reduced to the last extremity, were encouraged to attempt it where but very little blood had been lost, in hopes that

* For an instance of this kind, I may cite even Mr. Burns himself—he tells us, in one sentence, "if the hemorrhage have been or continues to be considerable, we must not wait until the os uteri be much dilated, as we thus reduce the woman to great danger, and diminish the chance of recovery." A few lines farther in the same page, he says "a prudent practitioner will not violently open up the os uteri, but will use the plug." A little farther on, he declares, "he, (a prudent practitioner,) will not allow his patient to lose much blood, or have many attacks; he will deliver her immediately, for we know that whenever that is necessary, that it is easy, the os uteri yielding to his cautious endeavours."—(*Princip. 5th. ed. p.* 324.)

† Essay on Uterine Hemorrhage, 5th ed. p. 40.

‡ See Chapters "On the Causes, which may render a natural, a preternatural Labour;" and "on Turning."

their patients' constitutions would suffer less injury, and their recovery be more speedy; which, till the experiment was made, was a very reasonable supposition—the woman died, and they seemed convinced that their deaths were owing to the violence of being delivered too soon, and not to the loss of blood, or any other cause."

1061. The other is, to permit the flooding to proceed until the woman shall be so much exhausted as to render the uterus pliant. Dr. Denman, as I have just noticed, supposed that when danger created a necessity for delivery, that then, from the loss of blood, the uterus would permit it with safety. Dr. Rigby says, that when the uterus contracts firmly round the fingers, we should desist from any attempt to deliver, and wait till the part be more relaxed by pain or discharge; and adds, "as an encouragement, that we may safely suffer a woman to lose more blood, the contraction may certainly be looked upon as a proof that there still remains a considerable portion of animal strength, and that she has not been so much affected by the loss as we before imagined."

1062. I cannot recommend this plan, though it be the advice of the first authority upon this subject. I am convinced, from both reason and experience, that it is seldom or never necessary; and is, perhaps, always injurious. To save the woman an ounce of blood, is a duty: to save her forty, or, perhaps, much more, is still a greater one. To follow, then, the speculation of Dr. Denman, or the advice of Dr. Rigby, would be widely departing from these duties. I do not, I cannot adopt either.

1063. What is essentially important to be done in this case? 1st. To save as much and as quickly as we can, the farther expenditure of blood. 2d. To obtain, as soon as the natural powers will effect it, the dilatation or dilatability of the uterus. 3d. To deliver then with as much speed as is consistent with the welfare of both mother and child.

1064. The first and second of these indications are, as far as I have witnessed for the last thirty years, readily complied with by the use of the tampon, and the other auxiliary remedies. If they be instantly had recourse to, the discharge will almost immediately abate; or in a short time be so diminished as to give no immediate concern. By this means we not only stanch the hemorrhage, but gain most important time; for during this truce, the natural agents of delivery will effect the desired relaxation of the os uteri.

1065. This plan, I believe, originated with Leroux; and has been adopted with entire success by myself for many years past. It has also the sanction of Mr. John Burns, who recommends it by saying, "a prudent practitioner will not violently open the os uteri at an early period, but will use the plug, until the os uteri become soft and dilatable."* It is true, Gardien thinks the plug will do harm, by exciting the uterus, and thus increase the separation of the placenta—but this is theory; it is not consonant with experience.

1066. The following case, selected from several of a similar kind, will place in a clear point of view the promptness and efficacy of this plan. Mrs. ——, while looking out of her window, was suddenly surprised by a profuse discharge of blood from the vagina. Before I arrived, though near at hand, more than half a gallon of blood was expended upon the floor and in a pot. The patient was upon the bed, pale, feeble, and excessively alarmed. I examined her immediately, and found the uterus rigid, and the placenta presenting. She had no pain; nor had she any previous to the irruption of blood. The discharge was very profuse and exhausting; but as the os uteri was undilated, and rigid, I introduced the tampon, and secured it within the vagina by a compress upon the external labia with a T-bandage. The flooding ceased immediately, and there was nothing passed the os externum but some of the thinner parts of the blood. After the tampon had been applied about four hours, pains commenced pretty briskly, and in about two hours more, they were of considerable force, so much so as to press against the external compress with some violence. I now removed the tampon; and the os uteri was found sufficiently dilated to allow the hand to pass with entire freedom; and the delivery was quickly effected, with safety to both mother and child.

1067. For the successful fulfilment of the third, and last indication, it is necessary that the practitioner should be well acquainted with the condition of the uterus, at the moment he is about to commence the operation, that is, he should know how far he may rely upon its co-operation, or how far it may be capable of that degree of contraction which shall secure the woman against a farther loss of blood. This can only be presumed, from taking into view the quantity of blood lost; the debility or exhaustion it has occasioned; and the degree of force the uterus may exert, at each return of pain.

* See note to par. 1059.

1068. If it be found, that the quantity of blood is not excessive; if the degree of exhaustion be not alarming; and if, above all, the uterus manifest considerable vigour; the delivery may be accomplished in much shorter time, and with much greater promise of success, (especially to the child,) than if the contrary of these obtain—in the latter case, the delivery must be conducted with the utmost caution, that the uterus may not be too suddenly emptied, and augment the danger to both mother and child. I shall again advert to this subject, when I come to describe the manner of conducting the operation of turning, or effecting the delivery in such cases.

SECT. II.—2. *When but little opened, but disposed to dilate.*

1069. In this situation of the uterus, but few obstacles to turning or delivery will present themselves; since, if the necessity of the case require the operation, the great objection to it is in some measure removed; for this disposition to yield to a moderate force, will secure the woman against an excessive loss of blood, by taking advantage of it, and effecting the delivery in proper time.

1070. But it must be recollected, that though the uterus may be disposed to yield, with even a moderate force, to a certain extent, if it be slowly and judiciously applied, yet it may refuse to relax beyond this, or to such a degree as would not embarrass the operation; nor can it sometimes be made to yield more, unless a dangerous or reprehensible force be applied.*

1071. In a case of this kind, we should gain time by the employment of the tampon, as directed above, and not subject the woman to unnecessary risk, by attempting to overcome the resistance of the uterus by violence; and it must also be recollected, that, in cases like these, cases so replete with risk, we are to devote ourselves to the best interests of our patients—they should never be subjected to the chance of a fatal hemorrhage, by our leaving them even for a short time; for neither the plea of other engagements, nor a persuasion they can receive no injury during a short interval of absence, can justify our withdrawing ourselves from them. I could cite a number of instances in support of this, were such confirmation necessary. If it be judged proper to employ the tampon, we should wait patiently for its effects; but we

* Leroux, Mariceau, Rigby, &c.

should wait at the bed-side, or near the patient, that we may take immediate advantage of any favourable change in the condition of the parts, for which we were so anxiously looking; or guard against any unfavourable contingency, that might suddenly or unexpectedly arise.

1072. Sometimes, indeed, the os uteri appears entirely closed, though at the same time it is easily dilatable; this case should not be confounded with the one just considered: for here the woman may be readily delivered, as far as the condition of the mouth of the uterus is concerned, should the urgency of the case require it. This situation of the uterus, for the most part, only takes place when the woman is nearly exhausted, and its powers so far impaired, that the agents for the *absolute dilatation* of its orifice are incapable of the effort. Should we wait for the expansion of the os uteri in such instances, we should wait in vain; and, perhaps, even be made witnesses of the death of the patient.*

Sect. III.—3. *Open to some extent, but very unyielding.*

1073. Were we to consult authors upon the point of practice in this condition of the uterus, we should find too many sanctioning forced delivery. I might employ the arguments here, that I have already used against any violence being committed upon an unyielding uterus; for it may sustain as much injury in the condition supposed here, as in the instances I have been considering; for if the opening be insufficient to permit the hand to pass without the employment of force, it will certainly be insufficient to allow the fœtus to pass without using much more; it should, therefore, be considered full as ineligible to operate in this case, as in the two I have just noticed.

1074. Besides, there is less excuse for being precipitate in this case; since, the desired relaxation will most probably soon ensue, as the os uteri has already yielded to some extent; therefore, by giving it a little more time, and by employing the tampon, the delivery may be accomplished without either violence or risk.

1075. Had we no command of the hemorrhage, we perhaps might be justified in the employment of force; as it would then be a dernier resource; but as we can certainly control the discharge by the tampon, we should be inexcusable to attempt delivery until it has been properly tried, and it has failed.

1076. But let not this case be confounded with the condition

* See Rigby on Uterine Hemorrhage.

next to be mentioned. For when it is ascertained that the uterus, though opened to some extent, is, notwithstanding, very unyielding, a young practitioner may, in the confusion and embarrassment created by the exigency of the case, easily run into the error, that this case must be treated as the one about to be considered. To avoid this error, he should carefully examine the condition of the os uteri, by placing, or rather hooking a finger within it, and drawing the edge towards him: if it readily yield, he may be pretty certain it will stretch by a well-directed force within its circle.

1077. But, in conducting this examination, I must caution him against a mistake he may readily make, if he be not put upon his guard; which is this—he may mistake the movement of the whole os uteri for a portion of it; but this error may without difficulty be corrected, by deliberately performing the examination, and attending strictly to the following marks—if a rigid os uteri be drawn, say towards the pubes, its edge under which the finger is placed, will retain its rigid feel; and if the finger be made to pass round the whole of its circle, it will be found to be uniformly stiff and round, and not any, or very little enlarged by the effort made upon it—but, on the other hand, if the os uteri be *dilatable* beyond the size we suppose it to be by the touch, it will be found soft; and will yield without difficulty to the effort made to stretch it: and if the finger be then allowed to pass round it, it will be perceived to be of a lengthened shape, and to have been entirely obedient to the force employed to draw it forward.

Sect. IV.—4. *Where opened to the same extent, but soft.*

1078. I have just declared an error may be committed by an inexperienced or timid practitioner in this condition of the uterus; and have pointed out the method by which it may be instantly corrected; it therefore behooves him not to neglect to entirely satisfy himself, as to the situation of the os uteri, before he finally makes up his opinion on the proper mode of practice.

1079. A careless or ill-conducted examination may in this instance lead to the loss of the patient; for, by mistaking the *absolute* diameter of the uteru for the *possible*, he may delay the operation so long as to render it totally unavailing; for I perfectly agree with Dr. Rigby,* that, however important it may be

* Rigby, p. 42.

as a general rule, that the uterus must be opened to the size of a shilling, or a half crown, before any attempt is made to introduce the hand; yet if this rule be rigidly enforced, "it would in some cases be attended with danger, as we might wait for the opening till it was too late to relieve the woman by turning; and for this reason it seems right we should sometimes be as much influenced by the os uteri being in a state *capable of dilatation* without violence, as by its being nearly open."* In my directions for the management of cases in the second condition of the uterus, I noticed this situation of the organ, and remarked that it usually occurred when the woman had flooded to excess—but I have known at least two exceptions to this.

Sect. V.—5. *Where fully Dilated.*

1080. When a case presents itself with this condition of the uterus, there can be no hesitation about the proper mode of proceeding, if the exigencies require instant interference; for in this case all objection is removed to the operation of turning, so far as any mechanical injury to the uterus is to be feared—but this is a rare case; and when it does occur, it seems to happen but under the following circumstances:—1st. In those women who are wont to have very rapid and very easy labours. 2dly. Where the *edge* of the placenta extends over the os uteri, and where, in consequence of this, the hemorrhage has not been sufficient to seriously injure the contractile powers of the uterus, though rather profuse. 3dly. Where the pains have been so rapid and powerful, as to suddenly dilate the os uteri, and cause the head to carry the placenta some distance before it.

1081. In the first case, (1080,) the hemorrhage will be of the most profuse and alarming kind; and if the woman be not very quickly aided, she will most probably die—this happened with the poor woman who died before I got to her assistance—in this situation of things not a moment is to be lost; turning must be instantly had recourse to.

1082. In the second instance, the discharge, though perhaps very free, is never so overwhelming as in the first; for the edge of the placenta may be passed over the os uteri but a small distance; the flooding will of course be in proportion as this may be more or less extensive—in these cases the membranes may even

* Rigby, p. 43.

present, rupture spontaneously, and thus save the woman: here the natural agents may accomplish the delivery—but more of this by and by.

1083. In the third case, the flooding will be perhaps, for a period, as alarming, and for the time of its continúance, as profuse as in the first—but the uterus acting promptly and vigorously, the head of the child is made to press so effectively upon the mouths of the bleeding vessels, as to arrest the hemorrhage.* In this instance we must act according to circumstances; if we see the patient during the time of her profuse flooding, we should not hesitate a moment to deliver, even though the pains be brisk; for it is entirely contingent that the discharge will be stopped by the intervention of the head. But should we not see the patient until, by the progress of the head, the bleeding is *arrested*, we should not interfere, but commit the case to nature.

1084. It has been recommended by some, among these, Dr. Blundell, lately, to rupture the membranes, in the expectation of stopping the hemorrhage, as frequently happens when the placenta is not fixed at the mouth of the uterus—but this should never be done; especially before the uterus is well dilated, or easily dilatable, and for the following reasons:—1st. Because they cannot be reached without great difficulty, in some instances, and in these cases, when they are reached, it is either by piercing the centre of the mass, or separating a portion of the placenta, and thus increasing the extent of the bleeding surface. 2dly. When they are pierced, and the waters evacuated, it will very rarely stop the hemorrhage. 3dly. When it does not do this, we are sure to have the difficulties of turning increased. 4thly. Should the flooding for the moment cease after the discharge of the waters, it is sure to return as the pains increase, and as the uterus expands. The only exceptions to these rules, are the cases just mentioned above, where the membranes present themselves in part. (1082.)

1085. Baudelocque assures us he has seen but one case, where the hemorrhage ceased after the discharge of the waters; and in that case the placenta was first delivered by a midwife, and the head of the child was made to press so firmly on the mouths of the bleeding vessels as to stop the hemorrhage.†

1086. It may be inquired, what plan of relief is to be pursued

* Baudelocque, Leroux, &c.

† System, Vol. II. par. 982.

in placental presentations, when they happen at or near the sixth month? These, when they occur, are truly embarrassing cases; as, for the most part, the uterus is not sufficiently enlarged to admit the hand to turn, and the hemorrhage is sometimes very alarming; the great risk in this situation of things, arises from the want of disposition in the os uteri to dilate, and, before this is accomplished, the woman sometimes succumbs from the unrestrained flow of blood.

1087. But women in this situation, even when unaided, do not necessarily die; nature being now and then competent to the task of delivery.* I may remark, as a general rule, and as a consolatory circumstance, that nature, if not interrupted, or when the best chance is given her, will almost always effect the expulsion of the ovum, previously to, or soon after the sixth month, without the manual interference of the accoucheur—for the most part, then, in such cases, our attention should be directed to the diminution of the hemorrhage, by such palliatives as we have constantly in our power; among these the tampon stands foremost.

1088. This remedy should be employed early in such cases, as it will, by proper management, save a prodigious expenditure of blood; and we gain by its application, important time; time that is essential to the successful delivery of the fœtus—for by the tampon the woman's strength is preserved; pain is permitted to increase; and eventually, though tardily, the os uteri is dilated; the placenta and fœtus thrown off; and the flooding almost immediately controlled. Other means should be advised, such as cold applications and the free use of the acetate of lead; but above all, if the uterus be disposed to dilate, the secale cornutum. These may powerfully aid the general intentions, and render the operation of the tampon more certain.

1089. Mauriceau and others attempted the relief of the woman by manual exertion under such circumstances; but I should, neither from the history of their cases, nor my own experience, be tempted to recommend their plan, I am persuaded, that the temporizing mode I have just suggested, is the proper one to pursue—Leroux long since adopted this method, and I have for many years but trod in his footsteps; and it is but just and proper to add, I have had abundant reason to be satisfied. Besides, in this opinion all the best writers concur.

* Rigby, Leroux, &c.

1090. Dr. Rigby, though by no means confident of the efficacy of the tampon, confesses, in the cases I am now considering, it might be used with propriety. Had he put this plan in execution, I am persuaded he would have been satisfied with its effects, and would unquestionably have prevented his giving the hazardous advice, "to wait for relaxation," by permitting the patient to flood, until the collapse almost of death should effect it.

Dr. Merriman's hypothetical objections against the use of the tampon in this species of hemorrhagy, are scarcely deserving of notice; because, so far as we have experienced, or can learn, the evils deprecated by him, have never taken place. We have employed this means upon numerous occasions, in both the accidental and unavoidable hemorrhages, and we can most truly say we have never seen the use of the tampon followed by the consequences he so much apprehends; for though the uterus might be distended by blood, were it influent within its cavity, we have nothing to fear of this kind when it does not. We would ask how blood was to pass into the cavity of the uterus, when it only flows over the posterior surface of the membranes! For when the uterine vessels are exposed by a separation of a portion of the placenta, the blood flowing from this denuded portion escapes through the os uteri, and not into the uterine cavity: if, then, the tampon prevents the discharge through this opening, it can only accumulate behind the membranes by partially separating them; and this will be but to a small amount, as they are kept pretty tense and resistant by the counteracting force of the liquor amnii. It is true, Dr. M's. fears might be realized after the delivery of the child, were a tampon introduced into the vagina; but in such cases, we never employ this remedy.

1091. Experience has often convinced me, that the relaxation of the os tincæ, so desirable in the cases I am now considering, will be as certainly achieved by time, as by this excessive expenditure of blood; and this time may be procured by the *interruption of the flooding* by the tampon. When we effect this, we assuredly gain a great deal—strength is saved, by saving much blood: and the woman's future safety is almost ensured; for as a general rule we may declare, that when no violence is committed upon the uterus by an attempt at forced delivery, the only thing to be apprehended, is the consequences of the hemorrhage.

1092. When the woman is farther advanced, say at the se-

venth month, artificial delivery may most generally be effected,* provided we do not destroy the advantages this more advanced period gives us, by improper treatment;—for instance, by rupturing the membranes, and the consequent discharge of the waters; this should therefore be especially guarded against. An attention to this point in these cases, is more important than at the full period; notwithstanding the advice of some accoucheurs to the contrary.

1093. It now only remains to describe the mode of effecting the delivery, when it is judged proper it shall be performed. In doing this, we can give only general directions for placing the woman, as we cannot, from extreme weakness, or from other causes, always command the most proper or convenient; it may nevertheless be well, when we have a control over circumstances, to point out that which in our opinion is best—that disposition of the woman's body, which will give us the most entire command of the uterus and its contents, will certainly be the most convenient for the accoucheur, and also the safest for the woman, and this position is upon the back; as has already been directed, (732,) &c.

1094. Many accoucheurs, and especially the British, recommend the patient to be placed upon the side; I have ever found this position less convenient than the one just suggested; and have therefore always adopted it, where the situation of the woman would permit a choice, without injury. The advantages of this position are first, we may employ either hand as may be most convenient to the practitioner, without changing the situation of the patient. Secondly, we always have one hand at liberty to co-operate with the introduced one, by placing it upon the abdomen. Thirdly, we can pass the hand more readily in the axis of the superior strait, by having the perinæum free over the edge of the bed. Fourthly, we can regulate the discharge of the liquor amnii, ad libitum, a matter sometimes of great moment † But it must be remembered, we are never to attempt to procure these advantages by moving the patient, when that movement would be

* Leroux, Rigby, &c.

† Dr. Ryan,‡ seems a little surprised at this direction, and asks, "How can this fluid escape, if the wrist or arm fills the vagina?" It cannot, if the arm should literally fill the vagina—but it never does so, strictly, agreeably to my own experience, but what the liquor amnii would escape, if the membranes be pierced near the os uteri. But this precaution is recommended only in the unavoidable hemorrhage.

‡ Manual of Midwifery, 3d Vol.

injurious to her: therefore, when she is very weak or faint, we must operate as well as we can in the position we find her; this is sometimes very awkward and inconvenient, but these are of no consideration, when her life, perhaps, is to be put in competition with our ease. For the most part, there is not much to be apprehended from merely changing the woman from her back, should she be lying upon it, to her side: but a greater change might be very mischievous; we are therefore frequently obliged to do this before we can operate, as it would be almost impossible to turn, when the patient's back and hips are at some distance from the edge of the bed.*

1095. Should circumstances, or choice induce me to deliver from the side, I always give a preference to the left, provided an election can be made. The hips should be drawn near to the edge of the bed, and made as salient almost as may be, by the flexion of the body, and the drawing up of the knees. In this position the left hand is to be used, as with the right it would be very difficult to operate, owing to the axis of the superior strait being very much in advance. If, on the right side, the right hand should be employed, and for the reason just stated.

1096. The woman being properly placed, (if in our power,) the hand should be gradually and gently introduced into the vagina, and then into the mouth of the uterus, separating the placenta and membranes from it as it advances towards the fundus —when arrived there, the membranes should be broken by pressing firmly against them; but the waters should not be permitted to escape but at our pleasure.

1097. We can command this almost always, as our arm fills up the os externum, and prevents it passing out—from time to time some is permitted to escape by pressing the arm firmly against one side of the vagina, until a sufficient quantity has been evacuated; the object of this gradual discharge of the waters is at once obvious; it prevents the uterus from falling into a state of atony, by its being too suddenly deprived of them. The feet are now to be seized, and the body made to descend by drawing them down to the superior strait. We should now allow a little time for the uterus to contract; when we are assured that it has done so, either by pains declaring themselves, by the child advancing farther into the pelvis without our exertion, or by the firm and hardened feel

* We muts always remember to have pressure made upon the abdomen by a judicious assistant, when we deliver the woman upon the side; as we cannot in this position, as when she is upon her back, perform it ourselves.

of the uterus through the parietes of the abdomen, we may most safely proceed to finish the delivery.

1098. But should the woman be very much exhausted before we commence our operations, we should use additional caution in the delivery—it must be very slowly performed, and we should have at each step of the progress, assurances, if possible, that the uterus has not lost, or rather that it possesses sufficient contractility to render the completion of the operation eventually safe, if performed with due and necessary care.

1099. We are advised by some, to pierce the placenta by the hand; but this should never be done; especially as it is impossible to assign one single good reason for the practice, and there are several very strong ones against it. 1st. In attempting this, much important time is lost, as the flooding unabatedly, if not increasingly goes on. 2dly. In this attempt we are obliged to force against the membranes, so as to carry or urge the whole placentary mass towards the fundus of the uterus; by which means, the separation of it from the neck is increased, and consequently the flooding augmented. 3dly. When the hand has even penetrated the cavity of the uterus through the placenta, the hole which is made is no greater than itself; and consequently, much too small for the fœtus to pass through, unless we force an enlargement; and this can only be done by the child during its passage. 4thly. As the hole made by the body of the child is not sufficiently large for the arms and head to pass through at the same time, they will consequently be arrested, and if force be applied to overcome the resistance, it will almost always separate the whole of the placenta from its connexion with the uterus,* 5thly. That when this is done, it never fails to increase the discharge; besides adding the bulk of the placenta to that of the arms and head of the child. 6thly. When the placenta is pierced, we augment the risk of the child; for in making the opening, we may destroy some of the large umbilical veins, and thus permit the child to die from hemorrhage.†‡ While, on the contrary, the more the placenta is preserved whole, the less risk to the child, as we then disturb no vessels connected with its immediate safety. 7thly. By this method, we increase the chance of an atony of the uterus, as the discharge of the liquor amnii is not under

* Baudelocque.

† Baudelocque.

‡ Dr. Denman confesses, though he recommends the searching for an edge of the placenta, and penetrating it, that in performing the latter "there is rather more danger of losing the child."—*Midwifery, Francis's ed. p.* 484.

due control. 8thly. That it is sometimes impossible to penetrate the placenta; especially when its centre answers to the centre of the os uteri; in this case much time is lost, that may be very important to the woman.*

1100. It is a mistake to suppose we produce a greater separation of the placenta when we pass the hand between it and the uterus, than when we pierce the placenta. But if it were true, it would be no objection to the method I advocate, since both uterus and placenta are pretty firmly compressed by the arm in its passage to the fundus, and the bleeding by this means restrained; and as this is the only objection which is raised against the method recommended, I shall consider it as completely answered by what is now said.

1101. Should the placenta not be found entirely detached from the uterus after the birth of the child, we should give a little time for it to separate spontaneously; and we must endeavour to promote this by friction upon the abdomen over the uterus, unless the flooding continues to be violent; it will then be proper to pass up the hand and separate it, for it may be the bulk of the placenta which keeps up the hemorrhage; by preventing the uterus from closing sufficiently upon the bleeding vessels.

1102. Before I proceed farther, it may be well to inquire into Dr. Rigby's opinion concerning the nature of the uterine vessels, which I am content to call arteries. He says, "The uterine vessels differ very materially from arteries, and particularly in having no such power of contraction within themselves, their contraction and dilatation being absolutely dependent upon the state of the uterus. In the unimpregnated state they are so small as scarcely to be discovered; but they are well known to increase when the uterus receives the ovum, and to grow in exact proportion to its gravidity; and when by the complete distention of it, they have acquired their utmost magnitude, their diameters cannot be lessened until the womb, being again emptied, closes them by the contraction of its whole capacity, and restores them to their original size."

1103. There is no one circumstance in this history that would lead me to reject the idea, that a part of the uterine vessels are arteries, and for the following reasons: 1st, the spermatic and hypogastric arteries furnish the uterus with these vessels; and it is well known that they increase in proportion as gestation ad-

* Dr. Rigby admits this, and declares he has "more than once found it," p. 64.

vances; consequently, vessels which all agree are arteries, enlarge, and in almost the same degree as those within the substance of the uterus, which are but continuations of them; 2dly, no physical difference has ever been discovered between them.

1104. These two circumstances I consider in themselves as conclusive of the identity of the uterine, and the spermatic and hypogastric arteries. If not so, why should these vessels enlarge in proportion to each other? And why should the spermatic and hypogastric arteries contract when delivery has taken place, without being dependent for this effect upon the "contraction of the uterus?" Now let us see what would really present itself, were Dr. R's. opinion substantially true; he declares, in the unimpregnated state of the uterus, that these vessels "are so small as scarcely to be perceived." Now, how should this happen if they possessed no contractile power within themselves? The mere contraction of the uterus could not alter their real capacity; it could only change their form by strongly compressing them; therefore, if what he supposes were even true, they should constantly present to us the shape of flattened cylinders or puckered tubes; but the contrary of all this appears when we cut into the substance of the uterus, for we then find that, though the vessels are "so small as scarcely to be perceived," yet those we do see, constantly present to us a circular form.

1105. That they do not contract during pregnancy, or immediately after delivery, as closely as arteries in many other parts of the body do, I admit; not because they do not possess contractility in an equal degree with these, but because they cannot exert it to the same extent, in consequence of their peculiar connexion with the general substance of the uterus—they are every way surrounded by, and connected with, cellular membrane,*

* I am not wishing to be understood, that there is any thing peculiar in the uterine arteries being surrounded with cellular membrane: for, this we know, obtains wherever there are arteries. I merely wish to insinuate an opinion, that they have positively less fredom than the arteries in the other parts of the body, by being more closely tied by their connecting media, and that, as I shall immediately say, for very important uses: and that they have relatively less, would appear evident, when we reflect on the immense increase they suffer during gestation; and though they may contract very considerably, yet it may be insufficient to stop their bleeding without the co-operating contraction of the muscular fibres, for the reason I shall presently assign. Levret makes the proportion of the unimpregnated uterus, to that of the impregnated, to be as eleven and a half to one. Now, if the arteries augment, (as it is reasonable to suppose they do,) in the same proportion, it will be seen how much their calibers must be reduced before their contraction alone can stop hemorrhage.

which will permit them to lessen themselves but to a certain degree, so long as the muscular fibres of the uterus remain in an uncontracted state, and for this plain reason, that the sum of their power or disposition to shut themselves up, is inferior to the power which keeps them in some measure upon the stretch. But that they do diminish in size to a certain degree, after being exposed by a separation of a portion of the placenta during pregnancy, I have no doubt, as the cellular membrane by which they are surrounded, will, from its elasticity,* permit them to do so, and thus contribute to the suppression of hemorrhage.

1106. We must regard the uterus during gestation, as in a state of coercion—every part and portion of it, sooner or later, is put upon the stretch; consequently, the vessels entering into its substance must enlarge with it, or put the cellular membrane, by which they are surrounded, upon the stretch; but as there is a most important intention to be fulfilled by their enlargement, they are found to augment in a ratio correspondent to the distention of the uterus; and they are not only made to yield in proportion to the increased demand for blood, but are also kept in that state by its constant influx, to supply the exigencies of the uterus in a state of gravidity.

1107. This condition of the uterine vessels, then, has two causes contributing to the same end—namely, the unfolding and separating of the fibres constituting the proper substance of this organ, and the constantly increasing tide of blood which flows within it: the first, if it does not directly administer to the enlargement of these vessels, will, to a certain extent, favour it, by taking off that restraint which a state of contraction imposes upon them, and thus make them more certainly obedient to the impulses of the spermatics and hypogastrics—the vis à tergo, of these vessels, may be considered as essentially contributing to their distention. Hence we can no longer recognise the almost imperceptible vessels of the unimpregnated, in the large canals, if we may so term them, in the advanced impregnated uterus.

1108. Let us now suppose the supply to the uterine vessels to be cut off by any means whatever, and we make a section of the uterus near, or at the full time of gestation, and while yet occupied by the ovum—what will this section discover to us? One of two things, certainly—either the vessels small and contracted, or still patulous and large. If in the first situation, Dr. Rigby's

* Bichat, Anatom. Gen.

opinion of their nature is at once proved to be unfounded; if in the latter, will it not confirm the notion I entertain, that they are kept in this situation by force, as above suggested, (1105?) If this be true, will not the same cause produce the same effect, when the uterus is emptied of its contents, but remains in a flaccid and uncontracted state? And will not the same consequences follow from the same cause in both instances, namely, a discharge of blood from the separation of the whole, or a part of the placenta?*

1109. If these statements be true, (and I sincerely believe them to be substantially correct,) it will follow, that the uterine arteries cannot contract sufficiently to stop hemorrhage, however eminently they may possess contractibility, so long as the muscular fibres of the uterus are in an uncontracted state; because their peculiar connexion with them, will necessarily prevent it: and, farther, I believe that this kind of union highly contributes to the safety of the patient, after the expulsion of the fœtus, by enabling it, or, perhaps, I may say, inducing it to contract, to throw off the placenta, and prevent after hemorrhage.

1110. They perform this valuable end by lessening themselves, and obliging, in a certain degree, the muscular fibres to follow them; and this contraction proves an extensive and congenial stimulus, and is, for the most part, successfully exerted to this end. But, should the muscular fibres of the uterus be indisposed, or unable, from the operation of any sufficient cause, to manifest a contractile power, hemorrhage must necessarily ensue. For the arterial extremities, which are exposed by the separation of the placenta, will and must remain open, not because they do not possess the faculty of contraction, but because it cannot be successfully exerted, for the reasons I have already assigned: therefore, that hemorrhage may cease, it is necessary to ensure the co-operation of the contractile fibres of the uterus; and to make them obedient to this end, is the great aim of all our exertions.

1111. From a review of the inquiry I have just made, it will be

* I might also insist, that, should the uterine vessels be found large and patulous when the flaccid uterus was cut into, that it would not confirm Dr. R's. opinion, should the explanation just offered be admitted; as it might be a reasonable conjecture to suppose that a cause capable of producing an atony of the muscular fibres of the uterus, might also be capable of rendering the uterine arteries passive; and, consequently, this uncontracted condition of them would tend to prove that this was really the case, rather than that they had been endowed with the power of self-diminution.

evident, that, as far as regards effects, there is but little difference between Dr. Rigby and myself; but much, as regards structure and function. My object, in this attempt, is the removal of error, and not the expectation of any great practical advantage; though I am persuaded some benefit may be derived from these considerations, in the cure of hemorrhages of this kind. Upon the notion of the uncontractibility of the uterine arteries, Dr. R. condemns the use of that class of medicines called astringents; and from the use of which I have frequently found advantage; for the sugar of lead must be admitted to be an astringent; and in cases of flooding, one of no common power. In the modus operandi of this medicine I may be mistaken, but I cannot be in its effects. There may be many other substances belonging to this class which may be equally, or even more efficacious upon trial; but we shall be deterred from employing them if we subscribe to the opinion of Dr. Rigby, that the uterine arteries "cannot contract of themselves."

1112. The unavoidable, and hemorrhage after the birth of the child, are every way so interesting from their frequency, and danger, that we feel ourselves justified in offering every novel suggestion that presents itself to our reading, or to our observation. We do this for two reasons: first, to put our readers in possession of the views of other practitioners; and, secondly, that we may have an opportunity to offer our remarks upon the opinions and suggestions of others, when such suggestions do not appear to us either very practicable or very useful. With these objects in view, we shall relate what we have collected since the second edition of this work went to press, upon these important points.

"*A Case of Fatal Hemorrhage at the seventh Month of Utero-gestation, from the Placenta being placed over the Mouth of the Uterus, together with Remarks upon it, and several other Modes of treating Uterine Hemorrhage.*

1113. In this case it is stated that the patient lost three pints of blood; she became faint; pulse ninety, and firm; os uteri admitted the point of the finger, but nothing unusual could be discovered. Rest, cold, opium, and sulphuric acid, were prescribed. Profuse hemorrhage followed after some hours, probably eight, as the medicines were directed every four hours, and it was after the third dose a profuse hemorrhage followed. But before Dr. James, the narrator, could arrive, the woman was in a dying state.

1114. Finding a large portion of the placenta in the vagina, and the os uteri fully dilated, he endeavoured to thrust his finger through the weakest edge of the placenta; but, failing in this attempt, he perforated the centre of this mass, seized the feet of the child, and brought them into the vagina. A pain came on, but was not repeated; and as hemorrhage followed, the child was extracted by mechanical means. Contraction of the uterus was solicited by the introduction of the hand; pressure was made upon the abdominal aorta, to lessen the extent of the heart's circulation, but all to no purpose. "Life was gone."*

1115. The history of this case gives rise to the following suggestions. First. It appears extraordinary that "nothing unusual could be discovered by the touch;" or, in other words, that the placenta could not be detected upon examination, as the os uteri admitted the point of the finger; especially as this mass must have been within reach, if a search had been made, as I have recommended, (1026,) by the introduction of the hand into the vagina, instead of the finger alone. It may, therefore, be proper to insist again upon this being done, whenever the degree of flooding renders it desirable to determine whether the hemorrhage be of the accidental or of the unavoidable kind; and this must be the case always when the discharge is very profuse.

1116. Second. That a patient, who had lost "three pints of blood," and was "faint," should be trusted to the powers of opium, acids, &c.; and the practitioner to feel so much confidence in them, as to leave her for eight hours to their sole influence. In this case the patient should have been narrowly watched, and the tampon should have been introduced, (1071.)

1117. Third. It is evident from the statement that artificial delivery could have been performed, most probably, a long time before it was, as upon the return of Dr. James, "a large portion of the placenta was found protruding through a fully dilated os uteri;" consequently, precious time was unnecessarily lost, and the danger of the patient augmented.

1118. Fourth. That the efforts of the practitioner to procure the contraction of the uterus should not have been confined to the introduction of the hand alone. Brisk frictions should have been made upon the abdominal parietes; and the ergot, or sugar of lead, should have been given, before any attempt was made to deliver

* North Amer. Med. and Surg. Journ. No. 5, p. 203, from the Lond. Med. Rep. for September, 1826.

the child; nor should time have been lost in the attempt to pierce any portion or part of the placenta; the hand should have been immediately passed between the uterus and the membranes; the latter of which would have been easily broken, and this without the loss of a moment of time.

1119. Fifth. No kind of reliance can be placed upon the attempt to diminish the "extent of the heart's circulation," by pressing the aorta; for the tonic contraction of the uterus is altogether independent of the general or local circulation of the blood. Besides, we do not think it possible to obliterate this enormous vessel by any means yet contrived; the pressure of the hand is certainly incompetent to such an effect; and if more rude means be employed, the parts interposing between the compressing power and spine may suffer severely; the attempt, moreover, is but losing precious time. But let us suppose that the circulation in the aorta is temporarily suspended; will this secure the patient against the renewal of the flooding when the pressure is removed? Certainly it will not; unless the uterus has spontaneously contracted; and if it be contracted, there can be no necessity for pressure upon the aorta.

1120. It may, however, be said that we may gain time by this plan, and thus give a greater opportunity for the uterus to contract. This is vastly more specious than solid, for by directing our attention to the pressure upon the aorta, we prevent the employment of friction upon the abdomen, which is much more important. Besides, the uterus is always found in such cases in one of two conditions; namely, either entirely flaccid, or very partially contracted. If in the first, it must be included between the means employed for the external pressure, and the spine; consequently, it may be severely injured by a force that is equal to stopping the circulation in the aorta. If in the second, it will be found, that no force, which can be safely applied, will compress the aorta successfully through the abdominal and uterine parietes; for it must be borne in mind, that the uterus in either of the supposed cases, will be above the umbilicus; and, consequently, will interfere with the attempt at pressure.

1121. With the same object in view, Dr. James also recommends the use of tourniquets to the extremities: we fear this plan, like the one just noticed, will be found equally unavailing, even supposing the proper instruments to be at hand. Of a similar character is the proposal of Dr. Mojon to throw into the umbilical vein, after having expressed from it as much of the blood

it contains as is practicable, as great a quantity of acidulated water as it will receive by means of a syringe. He declares this to have succeeded; and requests others to repeat it. He says it required to be pushed with both force and promptitude. He thinks that the sensation of cold which the uterus perceives when cold liquor is injected, favourably promotes the separation of the placenta.*

1122. The notice we have of this new method of relieving the placenta in cases of hemorrhagy is very imperfect. We are not informed of the condition of the uterus previously to the injection of the acidulated water; whether it was in a state of inertia; or whether it was owing to an unusual obstinacy of adhesion; or whether any attempt had been previously made to arrest the discharge, and it had failed. For we must declare, that merely to save the introduction of the hand, as he avows, is by no means sufficient to seduce a well-instructed accoucheur to depart from a method which has been successful for centuries, and which, in general, is not attended by either difficulty or danger. Besides, it may well be questioned, whether the liquid employed by Dr. Mojon had any agency in relieving the placenta from its adhesion; as we well know that this mass is often very suddenly thrown off without any interference. Moreover, it can only be useful in such cases, (if it ever be useful,) as are attended with *a partial separation of the placenta;*† a condition, we are bold to say, neither Dr. Mojon nor any other man, can determine with certainty without the introduction of the hand, if it be essential that this point shall be determined; and if this be necessary, as we believe it would be, the hand had much better perform its duty, while it has possession of the uterine cavity, than to be withdrawn to aid in the injection of a cold acidulated water.

1123. Again; all the pains just noticed, necessarily suppose, that all the mechanical agents necessary to fulfil the indications, (and we see these are sufficiently varied,) are at hand, and can be called into requisition, *sur le champ;* for these cases admit of no delay when extreme; and it is only when extreme, that they

* Révue Medicale, &c., for June, 1826, p. 502.

† The reason of this is at once obvious; for should the placenta be separated altogether, the liquid cannot be so applied to the uterine surface, as to make this organ perceive the impression of cold, and induce it to contract. Besides, it seems to be admitted, that it is by the uterus perceiving a sensation of cold, that it is induced to contract. Now, it is well known that this can be accomplished in a much more simple plan; namely, by applying cold water or ice to the abdomen, or introducing the latter into the cavity of the organ.

are proposed, or can be proper. Were these methods to be adopted into general practice, it would require constantly a serious load of metal for the poor accoucheur to carry into the bed-room of his patient,* or run the risk of losing his patient, if these are the only means to be relied on.

1124. We should place also under the same ban, the lately renewed expedient of "transfusion." We do not hesitate to credit the accounts of women not dying when this scheme has been resorted to; but we very much doubt whether the patient would have died, had it been withheld. We believe this principally on the following grounds:—first, because women bear excessive losses of blood without death following; secondly, because the quantity of blood transmitted to the alien veins does not appear sufficient to prevent death, since but a very few ounces have been declared to answer; thirdly, because the additional quantity of blood, though it increases by so much the stock of the patient, it does not necessarily or contingently promote the tonic contraction of the uterus, without which, all "appliances and means to boot," will be found unavailing; fourthly, because we have never yet met with a case in which the dormant powers of the uterus could not be roused into successful action, if means were timely employed, were of a suitable kind, and were properly applied. All these plans appear to us to savour too much of the improvements of Sir Abel Handy.†

1125. The cases related by Mr. Waller, are as strongly marked as any, perhaps, that have met the public eye; yet to us they are by no means conclusive. We can find in Rigby, Leroux, La Motte, Mauriceau, &c. &c., cases equally formidable, where recoveries took place without this means. And if we be permitted to enforce the above opinion by observations of our own, we could certainly relate a number of cases, where the subjects of them were reduced to as great extremity as those furnished by Mr. Waller: we shall, however, only refer to the one related in

* Dr. Slop's bag would have been very much too small, ample as it was, for so much ingenious machinery.

† Handy, Jr., demands, after Sir Abel has set the house on fire by his experiments, "What is to be done? Where's your famous preparation for extinguishing flames?"

"*Sir Abel.* It is not mixed."

"*Handy, Jr.* Where's your fire escape?"

"*Sir Abel.* It is not fixed."

"*Handy, Jr.* Where's your fire engine?"

"*Sir Abel.* 'Tis on the road."—(*Speed the Plough.*)

a subsequent part of this article; though many equally formidable, and equally successful, could be furnished.

1126. There appears to be excited, at the present time, a passion for novelty in the treatment of uterine hemorrhage; but no remedy or means that has hitherto reached our knowledge, appears to have any decided efficacy in themselves, in arresting this discharge. Both therapeutical and mechanical agents are anxiously sought after; and each inventor of a new mode of fulfilling an old, and never to be deserted principle, vaunts his supposed improvement with a confidence that almost bids defiance to skepticism, until trial is made of its boasted powers; it is then found to have no superiority over the remedial agents already known, and heretofore relied upon. In all these attempts it appears to be forgotten, that the only indication in a threatening hemorrhage after the delivery of the child, is to procure the tonic contraction of the uterus; yet some of the means had recourse to, are but ill-calculated for this end. Of this kind, is "transfusion;" the "filling of the uterus with rags;" "the compression of the aorta;" "injecting the umbilical vein," &c. &c. And the therapeutical means, such as the introduction of vinegar, or the acid of lemons, have no other power perhaps upon the flaccid uterus, than as a kind of vehicle to the mechanical agents, if we may so express it; and a variety of these can unquestionably be employed with at least equal success without their assistance. Yet we hold it proper to lay before the inexperienced practitioner all the means which have of late challenged the attention of the medical public. Therefore, with this impression upon us, we shall relate several other schemes, on which the changes have been rung with much complacency in our various periodical Journals.

1127. Messrs. Gorat, Evrat, &c., propose the immediate application of the citric acid to the internal surface of the uterus, with a view to arrest hemorrhage after delivery. They describe this method in the following terms: they strip a lemon of its skin, and having cut one end of it, they carry it into the uterus, and then express the juice on the sides of the cavity. They allow the decorticated lemon to remain, until the irritation produced by the juice, and this foreign body, excite the uterus to contraction, which, constringing the tissue of that organ, stops the hemorrhage, and the lemon is expelled with the coagulum formed about it.*

* Anderson's Quarterly Journal, Vol. II. No. VI. p. 298. Révue Medicale, &c. &c. &c.

1128. This is one of the late improvements in the treatment of this formidable complaint, and to which we have just alluded. It will be, in most instances, in this country at least, in the same predicament as several of the means we have already noticed—rarely at hand when required. It will also be seen, that from the mode of its application it acts but as a mechanical stimulant upon the uterus; and we are disposed to believe in no manner superior, or more certain than the naked hand, so very many years recommended. For in a hemorrhage that would require manual interference, we are of opinion that the small quantity of acid which could be expressed within the uterus, would be so effectually and suddenly diluted by influent blood, as to render its powers altogether nugatory. Now, we know from experience, that the very presence of a foreign body within the cavity of the uterus, and this passed, perhaps, even somewhat rudely over its surface, will cause it to contract, and thus arrest the discharge; and this mechanical influence has been acknowledged for more than a century. For we perfectly disclaim all effects from the acid; and for the reason just stated:* and we cannot but regard the suggestion of M. Gorat, &c. as one of those determined attempts at novelty which a little subsequent experience will cure.

1129. A woman aged thirty-two, was taken in labour with her first child, on the 12th of February, 1825. The pains soon ceased, and on the 15th, M. Bedel, physician at Schirmack, was consulted, who speedily delivered her with the forceps of a dead child. The hemorrhage was so considerable as to render the immediate removal of the placenta necessary; but the uterus did not contract, and the bleeding continued, together with tremblings, syncope, cold sweats, &c. Irritation on the internal sur-

* In addition to what we have urged above, against the agency of the acid producing any effect from its own properties, it may be added, that in such hemorrhages as occur before the entire separation of the placenta, the whole, or very near the whole, of the internal surface of the uterus, is still lined by the membranes; and, consequently, the acid cannot be placed in contact with the uterine fibre: therefore, if any effect follow the introduction of the lemon under such circumstances, it must proceed from its mechanical irritation, aided by that of the hand. Besides, the author of this method of treating uterine hemorrhage lays stress upon the sudden ejection of the citric acid by the pressure of the hand; but Chaussier tells us, in pressing a lemon cut as directed, and squeezed very tightly, it will not throw out its liquors in streams as stated by the inventor. At all events, it is no improvement upon the sponge and strong vinegar, long since recommended for the same purpose.

face of the uterus, cold water to the abdomen, injections into the uterus of cold water and vinegar, were unavailing.

1130. Plugging the vagina, and also the uterus, were now resorted to, as the only remaining means of safety. The uterus was filled with pieces of rags, for fear the patient could not sustain the loss of blood necessary to fill the cavity; while a methodic compression was, at the same time, made upon the abdomen. The hemorrhage was immediately arrested, and soon after reaction ensued.

1131. On the 16th, Mr. Bedel removed the plugs from the uterus cautiously and successively: and had the pleasure to find the uterus to contract regularly after each removal. The lochial discharge continued: but there was no secretion of milk. The patient recovered slowly.*

1132. This is another instance of attempting to arrest an alarming uterine hemorrhage in a new way; but it more strongly recommends itself to us than some others, from its having succeeded in the instance in which it was tried, and from the simplicity of its plan, and the certainty of the materials to operate with being almost always at hand. But we cannot help feeling surprised, that we do not find an instance, among those we have recorded, in which well-directed and properly continued frictions over the region of the uterus have been instituted; a means, which has ever, in our hands, proved certain in restoring the lost energy of the uterus. Nor is there any case related, within our knowledge, out of this country, in which the acetate of lead has been given in proper doses; nor in which the ergot had been resorted to, until very lately, though the success of these drugs in uterine hemorrhage have been frequently proclaimed in the periodical journals of this country for at least the last eight years.

1133. Nor are we less surprised at the misapprehension, which almost constantly seems to prevail, as regards the use of the tampon in the cases under consideration; for it is to the ill-timid application of this remedy, that we must attach its want of success. Leroux does not propose this plan as certain of success in floodings which follow the expulsion of the placenta; though he declares he has succeeded sometimes with it in such cases. Its great value is in floodings before impregnation; before the uterus

* Bulletin Universal, for January, 1826, from the Gazette de Sante, for December, 1825.

is emptied, when it is impregnated; and when this organ will contract, after labour is terminated.

1134. In entering upon this part of our subject, it will be important to the consideration, that we say a few words upon the changes effected in the uterus itself, by the delivery of the child, and the expulsion of the placenta.

1135. I regard the uterus as a hollow muscle; and, like the other hollow muscles, has no separate or independent antagonizing form; but has, like them, a compensating one, arising from its own organization or structure;* and also, like all the muscles of this kind, when not distended by some distracting force, will contract by virtue of some power of its own, and upon the healthy disposition of this kind in the uterus does the welfare of the woman depend, in every instance of child-birth or abortion.

1136. I shall not stop to inquire, as its consideration is not immediately involved in the present investigation, whether this is a legitimate muscular contraction, or the exertion of that power, common to many organic, as well as inorganic substances, termed elasticity. My own opinion, however, is decidedly made up, that the efforts the uterus makes to expel its contents, and to close itself after it has performed this office, is by virtue of a genuine muscular contraction.

1137. In the performances of these offices, two distinct powers

* I say, that the uterus has, like the heart, and perhaps all other hollow muscles, an antagonizing power within itself, and this by its own organization. I shall attempt to prove this, by stating, that in consequence of that contraction, which we call the alternate contraction of the uterus, having taken place, a considerable portion of the blood which at that moment occupied the uterus, is driven quâquâ versum into the general system; a facility for which is derived from the frequent anastomoses of the arteries and veins, and by the latter not having valves. This is proved by the diminished thickness of the uterine parietes, and by the whole surface of this organ becoming paler at the moment of contraction. This state of things continues until this effort has ceased—so soon as this happens, (which may be longer or shorter, according to the power which governs the contraction, and the state perhaps of the muscular fibres of the uterus itself,) the vessels which had just been deprived of a portion of their contents by the contraction, will at the moment of relaxation be but imperfectly filled, and even a genuine vacuum may be induced; but, so soon as the restraint imposed upon the whole of the uterine vessels by this contraction is taken off, the blood will instantly rush into them, to restore the disturbed equilibrium, and thus again distend these vessels; which distention will prove a stimulus to the uterine fibres, and thus induce a new contraction: and in this way would I account for the alternate pains of labour.

are concerned. One shows itself by a constant disposition to lessen the cavity of the uterus, whenever it may be put upon the stretch; or at least, whenever the cause is removed, that placed it in that condition. The other declares itself by alternate contraction, which is, perhaps, only an exalted degree of the same power when urged by stimuli, as in child-birth, abortion, or from any other circumstance which may require its interference, to expel a foreign body from its cavity.

1138. The first of the powers just noticed, has been termed "tonic contraction;" and the second "spasmodic contraction," from its being usually, though not necessarily, attended with pain. This latter, it must be remembered, cannot take place without the former having preceded it: though the former can happen without the latter.* (251, 252.)

1139. Now, the economy of the uterus, in its healthy condition is such, that it immediately exerts its tonic force to close upon, and to accommodate itself to the exact size and shape of such contents—thus, as soon as the liquor amnii is discharged, the uterus instantly diminishes its size, by virtue of this tonic power, and this in the exact proportion to the quantity of water displaced. So plastic is this power, that it makes the parietes of the uterus assume the inequalities presented by the surface of the child; and, when the child is delivered, it reduces itself so much as to compress the placenta, and force it from its attachment; and eventually expels it from its cavity. When this is achieved, it goes on reducing itself, until it interrupts, in a great measure, the supply of blood from the spermatics and hypogastrics; closes almost completely the mouths of the vessels exposed by a separation of the placenta, and thus prevents any inordinate flow of blood.

1140. From this it appears, that the safety of the woman depends almost entirely upon the healthy exercise of the power just termed the "tonic contraction;" and, on the contrary, that the risk she may run in giving birth to her child, is in exact proportion to the diminished force of this power; of course, the preventing and stopping of floodings, will depend upon recalling it when absent, or upon augmenting it when deficient.

1141. The tonic power of the uterus may be feeble, or altogether wanting—it may be lost in every portion of the uterus,

* See Essay on the Means of lessening Pain in certain Cases of Labour, &c. by the author.

or only in a part; thus, the fundus may possess it, and it may be absent from the body and neck; this may give rise to the diversion of the uterus. The fundus and neck may be deprived of it, while the body may enjoy it; this may occasion the hour-glass contraction. The body and fundus may be exhausted of it, while the neck retains it;—this may produce the concealed hemorrhage. The body and fundus may be firmly contracted, while the neck of the uterus may be flaccid—this may occasion flooding, if the placenta has been attacked in that vicinity.

Sect. VI.—6. *Causes of Uterine Inertia.*

1142. The remote causes of uterine inertia are said by Leroux and others to be, 1st. A general morbid condition of the body, as tendency to scurvy, &c. 2d. Long illness. 3d. A depraved condition of the circulating mass. 4th. Unusual laxity of fibre, as in leucophlegmatic habits, &c. 5th. Over-distention, from an excess of liquor amnii. 6th. Strong emotions or passions of the mind. 7th. A long protracted labour. 8th. A previous hemorrhage. 9th. Lesions in the proper substance of the uterus itself.

1143. But the condition of the tonic power is far from being always regulated by the contingent situation of the general system; we cannot infer its absence from the debilitated state of the body at large; nor can we calculate upon its presence with certainty, because every other function is carried on vigorously. This is a fact well known to every practical accoucheur, and should teach us this highly important caution; to act as if this power were, or easily might be expended, and to consider no woman safe from the casualty of its exhaustion, until we are assured to the contrary by a careful examination.

1144. Fortunately for the patient, as well as for the practitioner, this power, when weakened, nay, even to excess, may almost always be recalled by proper means, and is almost certainly obedient to the judicious use of appropriate stimuli; but upon the time and manner of this application much will be shown presently.

Sect. VII.—7. *Of Hemorrhage before the Placenta is expelled.*

1145. We are now to consider hemorrhage as it may occur, before the placenta is expelled. It must be recollected that a flooding cannot happen, but when the placenta is in part, or wholly separated from the uterus; and that this separation has been effected in the cases we are now to speak of, by uterine contraction; unless a sufficiently powerful mechanical cause had been previously offered. For so long as the placenta preserves its continuity entire with the uterus, no flooding can ensue, should this viscus be even in a state of complete atony or exhaustion.*

* Unless some mechanical violence has been done to the uterus, either from external impression, or from some incautious manœuvre performed within its cavity, as in the act of turning, or the injudicious use of instruments, the placenta will preserve its connexion with the uterus until disturbed by uterine contractions; and, consequently, there will be an exemption from flooding, until this takes place; but this connexion may be destroyed in a moment, by the causes just stated, and a hemorrhage as quickly follow.

Since writing the above note, an interesting case has occurred, which completely proves my position. Mrs. ——, on the 23d of March, 1823, was taken, at her full period, with slight pains, and the other marks of approaching labour. Soon after these had manifested themselves, she was seized with violent vomiting, and considerable hemorrhage: there was an almost constant effort in the uterus to throw off its contents, together with an occasional increase of pain. I was now sent for, and found the patient as above stated. The vomiting returned from time to time; and whenever it did so, there was an increase of the hemorrhage; and this also occurred when the alternate pains were on, which gave rise to a suspicion that it was a placental presentation. I ordered the patient to her bed; and upon examination, the membranes were found protruding, and the child rapidly advancing. I ruptured the membranes immediately, and the hemorrhage was instantly suspended: in a few minutes more the child was expelled, but still-born. The navel-string was cut, but not a drop of blood issued from either portion of it. Every effort was unavailingly made to resuscitate the child. The placenta was found loose in the vagina, and, upon examining its surface, it was found covered over its whole extent with a thin black coagulum; an evidence it had been entirely separated, and the child made to perish in consequence. The uterus appeared to contract well, and every thing was promising, for an hour; at the expiration of this time, the uterus relaxed, and a profuse discharge instantly took place. When I arrived, (for I had taken my leave,) the patient was very faint, extremely sick at stomach, and very restless, which necessarily augmented the discharge. I immediately commenced pretty brisk frictions upon the abdomen—the uterus soon contracted, and did not again relax. Two grains of opium were ordered every two hours, until the patient should become tranquil. On the following morning she was found much recruited, and had no unpleasant symptom afterwards.

1146. As there is considerable variety in these cases, it will be well, for the sake of perspicuity, to consider them under the following heads.

a. 1st. Where there is a partial separation of the placenta, but the uterus enjoying some tonic power.

b. 2d. Where there is a partial separation, but the uterus possessing very little or no tonic power.

c. 3d. Where there is a partial separation of the placenta, while the remaining portion is too adherent, and the uterus contracts but feebly.

d. 4th. Where every thing is as at 3d, except that the uterus enjoys its full power.

e. 5th. Where there is an entire or partial separation, but the uterus in a state of exhaustion or syncope.

f. 6th. Where there is either a partial or complete separation of the placenta, and where the body and fundus are in a state of inertia, while the neck enjoys its tonic power.

a. I.—*Where there is a partial Separation of the Placenta, but the Uterus enjoying some tonic Power.*

1147. In this case the last efforts of the uterus to expel the child may have occasioned a partial separation of the placenta, and of course, there will be a greater or less discharge of blood: 1st. As the exposed surface may be large or small. 2d. As the contractile power of this organ may be more or less perfect. 3d. As the circulation of the blood may be more or less hurried.

1148. In almost every instance after the birth of the child, we find a quantity of blood issue from the vagina; but the young practitioner must not look upon this as a hemorrhage, unless it continue some time and has an evident effect upon the pulse.* In this case, he is immediately to attempt to arrest it, by soliciting an increased contraction of the uterus, by pretty briskly passing his hand over the region of the uterus, and from time to

* Some women will bear a much greater loss of blood than others; and, therefore, we are to decide upon the propriety of interference, from the effect which this loss has upon the system, rather than from the quantity which has been expended. If we do not attend to this rule, we shall interfere unnecessarily where the powers of the system are every way competent to the exigencies; and in other cases we may delay assistance so long as to render it unavailing.

time attempting, as it were, to grasp the uterus by closing his fingers upon it.

1149. By proceeding in this manner, he will almost instantly find the uterus harden under his hand; a coagulum of a greater or less size will escape from the os externum; a slight pain may come on, and the placenta may be thrown down into the vagina. When this contraction takes place, as it almost always does when the woman has not been too much exhausted either by a long protracted labour, or by disease, the discharge of blood is quickly put a stop to; the uterus diminishes much in size, and retires almost within the pelvic cavity, while the placenta is entirely detached from the uterus, or it may even be expelled from the vagina. This is, perhaps, the most simple case of flooding that can occur, and I believe it never requires any other management than frictions upon the abdomen; its termination may not always be so sudden as I have now stated, but it is sure to take place in a very short time, and as fortunately as I have described it to do.

b. II.—*Where there is a partial Separation, but the Uterus possesses very little or no tonic Power.*

1150. In this case, the same cause may produce the same effects as in I.; but the uterus may be in a very different condition: here there will not only be a discharge of blood in proportion to the surface exposed by the separation of the placenta and the state of the circulation, but also a continuance of it, commensurate with the atonic condition of the uterus.

1151. This state may continue for a longer or a shorter time, according to the force of the remote cause which induced the atonic state of the uterus, or as it may be of easy, or of difficult removal.

1152. In this, like every other case of flooding at this period, we should endeavour as quickly as possible, 1st, To remove the cause which induced the atonic state of the uterus, wherever it is evident and practicable. 2d. To excite, as soon as may be, uterine contraction. It will be readily perceived, that we cannot control some of the remote causes of inertia just enumerated, and, therefore, our chief attention should be directed to the fulfilment of the second; and this should be immediately attempted by frictions upon the abdomen, as above directed. On frictions

I have the greatest reliance; and I never fail to employ them, with a view to promote contraction, whether there be hemorrhage or not, provided the uterine globe be not felt firm upon the application of the hand to the abdomen immediately after the child is removed from the mother; and when there is a flooding, I chiefly rely upon them, to restore the energy of the uterus; and in this I never have been disappointed—its influence is as prompt as it is efficacious; indeed, I consider frictions as indispensable, let whatever other means be employed.

1153. I have never had the misfortune to meet with a uterus that was altogether insensible to this mechanical stimulus; nor to lose a patient from the immediate loss of blood; and I can with great truth affirm, that this simple plan has constantly appeared to me to be the chief agent in arresting the most formidable floodings of the kind I am now considering. The external face of the uterus, when acted upon by the hand through the abdominal parietes, appears to me to be equally sensible to stimuli of the mechanical kind, as the internal surface; and it certainly offers facilities and advantages that the cavity does not:—1st. It is always accessible to be acted upon; 2d. No risk is run by very freely stimulating it with the extremities of the fingers; 3d. It excites very little, or no pain, if judiciously managed; 4th. No fear is to be apprehended of increasing the discharge, which is not always the case when the hand is employed within the uterine cavity; 5th. No danger of inducing inflammation or other injury, as may happen by the introduction of the hand.

1154. The attempt to arrest hemorrhage, by reviving the powers of the uterus, is not new; it was long since recommended by a Mons. Dassé,* an accoucheur of Paris, whose method, though I do not exactly follow it, I will give in his own words. "Il ne faut que porter les deux mains sur la region hypogastrique, et comprimer mollement le corps de la matrice par un mouvement tantôt circulaire, tantôt de droite à gauche, de gauche à droite, de haut en bas et de bas en haut. Tons ces différens mouvemens sont absolument necessaires, à cause des différens plans de fibres que s'entrecroisent et forment une espèce de réseau."

1155. I have just observed, that I do not exactly follow his method; though the effect is precisely the same. One hand is all that is necessary, or that can be conveniently employed; and if this be industriously and properly used, I am persuaded that it

* Journal des Savan's d'Aout, 1792, p. 474.

will rarely fail. I must, however, in justice to myself, declare, I was in the habit of employing this method long before I was aware it had been previously recommended by M. Dassé.

1156. When we have adopted this method, we are to take care we do not abandon it too soon; for it is not sufficient that we procure the contraction of the uterus; we must maintain it in this condition for some time, and this by the continuance of the friction. And I would at this time caution the inexperienced practitioner, against a very natural cause of alarm; when almost at the instant he feels the uterus hardening and diminishing under his hand, he *hears* very distinctly a considerable discharge of coagula and fluid pass from the vagina; and at the same moment he finds the uterus retiring, as it were, from under his hand.

1157. This discharge is but the effect of the contraction induced by his manœuvres upon the external surface of the uterus, and must be regarded as a favourable omen, as it assures us that the uterus is about to regain its powers. Perseverance is now all-important: the frictions are to be continued until he has sufficient evidence of the permanency of the contraction, by noting that the uterus no longer relaxes itself, as it did most probably at the commencement of his operations.

1158. Should this plan, however, not succeed in detaching the placenta, and stopping the flooding, we are, secondly, to deliver the placenta by the introduction of the hand within the cavity of the uterus, as this mass must now be considered as the cause of the continuance of the hemorrhage, by preventing the uterus from contracting sufficiently to shut up the mouths of the bleeding vessels. It will be found either partially or entirely detached. If in the first condition, we insinuate carefully the fingers behind the loose portion of the placenta, and gently separate the adhering part: we then grasp the mass in the hand, and rotate it several times against the internal face of the uterus, with a view of more certainly procuring subsequent contraction; nor must the hand be withdrawn until this is perceived. Should the uterus, however, be found to contract firmly upon the hand, immediately after it has effected the separation of the placenta, it may be gradually, but never suddenly withdrawn.*

1159. If the placenta be found detached from the uterus, it must be withdrawn; but the same precautions should first be

* If the uterus regain its wonted powers, the hand, with the placentary mass, will be expelled almost immediately from its cavity; but even when this effect is perceived, the hand should not be permitted to leave it too suddenly.

practised. We must not, however, consider the patient free from all risk, because the placenta is extracted; we should examine the condition of the uterus, by again placing the hand upon the abdomen: if it be well contracted, it will be found hard and about to sink within the pelvic cavity, which will give us strong grounds to believe that the woman is about to do well; but if, on the contrary, the uterus is found large and not very firm, we have every reason to fear there will a renewal of the flooding, and the frictions must again be had recourse to.

1160. It must be confessed, however, that the young practitioner may not be able, without some farther directions, to detect the flaccid condition of the uterus, though he may be very able to perceive a contracted one—I shall, therefore, state, that when the uterus is not contracted, the whole abdomen appears equally soft and pliant—if the extremities of the fingers be pressed backward from the pubes, no hard unyielding tumour is perceived; and if he inquire into the state of the discharges from the vagina, he will find them, if not profuse, more abundant than they should be—when all these circumstances combine, he may be certain the uterus is in a state of inertia; and he will soon be convinced of this, after he has commenced the friction upon the abdomen, (and which should be immediately done,) by finding it to harden, sometimes suddenly, at others gradually, under his hand, and presently retire, when well-conditioned, into the pelvis, or at least the fundus will be found below the umbilicus.

1161. In all cases of severe flooding of this kind, I am in the habit of directing the nurse, or any intelligent woman, to renew these frictions from time to time for an hour or two after my departure, and more especially should there be a return of discharge, that no evil may arise until I can again attend to the patient.

1162. 3d. I think it best to call in every aid in such cases that may be at command. The ergot, in twenty-grain doses, must be given immediately, and repeated in fifteen minutes if necessary. Late experience seems to declare it preferable to the acetate of lead, and I now employ it in its stead.

1163. It is not unusual, where the woman has sustained considerable loss of blood, for the stomach to become much deranged. Vomiting or great nausea, is almost always an attendant upon it; and when either takes place, it becomes very fatiguing and distressing to the patient. If she vomit, the exertion is so severe as sometimes to exhaust her almost to syncope; and during this

act, there is almost always a greater or less discharge of blood, which at this moment can be but ill spared—if it be sickness of stomach, it renders the patient so wretched, that she cannot rest quiet for a moment together in one position; she therefore tosses about from place to place, until she is almost spent—I dread this latter condition more than an occasional effort to vomit, as it seems to interrupt the tonic contraction of the uterus, by the influence which nausea is wont to exert over all muscular power, as well as to induce immediate exhaustion, by producing unceasing jactitation. Nothing tranquillizes the stomach under these circumstances, so far as I have observed, like opium, in the solid form. A newly prepared pill of two grains of the opium, with a very small portion of soap, to facilitate its solution in the stomach, should be given every hour or two, until the vomiting ceases, or the stomach becomes reconciled. I have found a sinapism over the region of the stomach of great service, and should be resorted to, if necessary.

1164. Should the discharge be too abundant after the expulsion of the placenta, though not amounting to a flooding, it should be moderated by the use of the frictions and the ergot.

c. III.—*Where there is a partial Separation of the Placenta, while the remaining Portion is too adherent, and the Uterus contracts but feebly.*

1165. A flooding may be excessive under the circumstances mentioned in this variety, and considerable time may be lost in vainly soliciting the extrusion of the placenta by frictions upon the abdomen, and efforts exercised upon the cord,* before it is suspected that this mass may be too adherent—it is fortunately but of rare occurrence, but its management on that account should be the better defined.

1166. We cannot know with certainty, if this complication exist, until the hand be pressed into the uterus, and a proper examination made of the condition of the placenta; for this case,

* Whenever an attempt is made to deliver the placenta by force being applied to the cord, great care should be taken that it be not so great as to separate the funis from this mass; for if this occur, it would be most probably necessary to introduce the hand, which sometimes creates to the young practitioner a good deal of embarrassment, as the placenta is not easily distinguished from the internal face of the uterus itself.—See Section on the mode of delivering the placenta when the cord is ruptured.

as far as regards common symptoms, resembles almost every variety of retained placenta, and nothing but a strict search can justify its being pronounced a case of adherent placenta. This excuse, I am aware, is frequently employed to justify the introduction of the hand into the uterus, to bring away the afterbirth by force, when it required but a little more time, or a little more address, to be delivered by the natural agents. We frequently hear young practitioners boast of the difficulties they have encountered in delivering the placenta; but we rarely meet with an experienced one, who complains of the same thing.

1167. In this country, I believe, that the adherent placenta is of very rare occurrence; while, in Great Britain, or rather perhaps London, it is comparatively frequent, agreeably to the testimony of Dr. Ramsbotham.*

1168. There is something remarkable in the occurrence of this condition of the placenta, for which we do not pretend to account. For we cannot well suppose, that a practitioner of so much experience as Dr. Ramsbotham, and one who seems to possess so much talent for observation, can have mistaken the nature of the cases he describes, as "too adherent placentas." In this country, at least so far as my own experience will justify the remark, this diseased condition of the placenta is extremely rare; not having met with more than two or three cases in more than forty years. It would also appear to be of very rare occurrence in some part of Germany, as a Dr. Seiter declares he had not met with a single case, "d'adhérence anormale entre le placenta et l'uterus," in a practice of twenty years. The cases supposed to be of this kind, have been simply instances of the hourglass contraction, (placente enchatonné.)†

1169. This condition of the placenta may be suspected, when the uterus continues large, though pretty firmly contracted; when there is a constant issue of blood, and that florid; when the placenta is not within reach of the finger; and when, after a gentle force is applied to the cord, it is found to retract, as if an elastic string had been stretched. When the quantity of blood expended from the vagina would render manual interference necessary; and more especially, when frictions, the exhibition of ergot and other "appliances," have failed to stop the discharge, or to ex-

* Practical Observations on Midwifery, page 80, American edition.

† Siebold's "Journal de l'Art des Accouchements," &c. as quoted in "Bulletin des Sciences Medicales," No. 1. Jan. 1827, p. 83.

pel the placenta, the hand should be introduced, and the separated portion of the placenta sought for. From this part the hand should take the direction of the adhering portion, and if it appear that it would require considerable force to destroy its connexion with the uterus, every attempt to detach it should be instantly desisted from, and only the piece or pieces found loose, or not adhering, should be removed; the remaining part must be trusted to the efforts of nature.

1170. There will necessarily be a difference, both in degree and in the extent of the adhesion in individual cases. While some may be only rather more strict than is usual, others will seem to have the substance of the placenta identified with that of the uterus—and, while a small portion only may be too adherent in one case, a large one may be so situated in another. But in every instance, where there is a separated portion, there will be a discharge of blood from the vagina, either fluid or coagulated; and that, in proportion to its accumulation, or the activity of the uterine fibres. These cases are almost always accompanied by pain, though not of the most severe kind; they, however, er, make but little impression upon the placenta, nor do they much diminish the size of the uterus; yet with each return there is more or less blood discharged, and the woman rendered faint by the frequency, rather than the quantity evacuated at each contraction, except when there is a large portion separated; then, as in every other instance, she will be more quickly exhausted.

1171. In cases like these, it seems to be agreed, that nothing but putting the uterus in a condition to contract, by the removal of such portions of the placenta as can be readily detached, will put a stop to the flooding, or even moderate it: and it seems also well understood, that even this does not place the woman beyond danger—the efforts of nature are not always availing, and the woman dies from the mischief created by a retained portion of the placenta.

1172. Should the discharge continue after a part of the placenta is removed, the ergot and frictions should be continued; and astringent and detergent liquors should be thrown from time to time into the uterus itself, by means of a proper syringe.*

* A considerable variety of substances have been proposed for this purpose: as alum and water, wine and water, wine alone, vinegar, &c.—but, what has answered best in my hands, in the very few instances of this kind which have fallen

1173. Let this case be treated with what address it may, it is replete with danger to the woman; she may sink from the pertinacity of the discharge, or succumb under fever, or other evils excited by a putrifying placenta. It is no part of my plan to speak of the subsequent treatment of such cases; I can with much confidence refer, for more information upon this head, to the very able treatise of Dr. Ramsbotham, just mentioned: and I may here take occasion to say, it is not only for this subject, but several others of high interest, I would recommend every practitioner of midwifery to the perusal of his work.

d. IV.—*Where every thing is as at* III. *except that the Uterus enjoys its full Power.*

1174. This variety is not only less frequent, but is much less dangerous, than the one just spoken of; for the uterus, when enjoying its full powers, will contract, with sufficient force to prevent any serious mischief from hemorrhage, though there may be considerable waste before the uterus is emptied of the placenta —this requires the same manual treatment in the beginning, and the same medical routine for the subsequent symptoms.*

under my notice, has been a strong infusion of chamomile flowers, in which a piece of quicklime has been slacked, and permitted to settle perfectly clear. This may be used, moderately warm, three or four times a day, or oftener, if required. The common pewter syringe for enemata, with a flexible tube attached to it, answers perfectly well—the gum elastic tubes, for the throat or bladder, may be very readily fixed to the extremity of this instrument. In one instance, I saw port wine and water, with a little alum, used with great advantage.

* There is a variety in this division, which cannot be considered as strictly belonging to the subject under consideration; yet its own importance will, I hope, be a sufficient apology for introducing it here—it is, where the placenta is completely adherent, and the uterus powerfully contracts upon this mass, and prevents the introduction of the hand, or of even a couple of fingers, for the removal of it, were this even practicable. It is fortunately of rare occurrence—I have seen but two cases of it, and these in the same female, in neither of which was there flooding; indeed, scarcely a drop of blood was discharged in the one instance, and in the other only a few small coagula were expelled, the whole not amounting to four ounces. This case must be trusted to nature; for after repeated examinations the uterus was not found to relax sufficiently, even to attempt the removal of the placenta. This mass was expelled entire, on the third day, in the one case, without any unpleasant consequences; but in the other, it employed many days before it was thrown from the uterus, and then in small detached masses accompanied with great fœtor, thirst, and fever. The patient eventually did well, though she remained weak a considerable time.

c. V.—Where there is an entire, or partial Separation, but the Uterus in a state of Exhaustion or Syncope.

1175. This variety is most truly alarming, and requires the most prompt and judicious interference, that the woman may not almost instantly die. The case occurs, 1st. Where a long-protracted labour has much exhausted the patient, previously to delivery, but where delivery has eventually been unexpectedly sudden. The uterus, from previous fatigue and exertion, becomes enfeebled, though capable for the moment of a powerful effort, which suddenly terminates the labour, but by which its power is expended—the placenta, from the long-continued and frequently repeated pains, was ready to separate, and waited but for the contraction which expelled the child, to destroy its connexion with the uterus, to fall loose or nearly so into its cavity; and thus give opportunity to the exposed vessels to pour out a torrent of blood. 2d. It takes place, and this more frequently than from the cause just mentioned, when the labour has been very rapid; and where the child seemed to be floated from the uterus by a sudden gush of the waters—under such circumstances, the uterus is sometimes instantly deprived of its tonic power, and thrown into a state of absolute *syncope*, as it has been happily termed by Leroux. Or, 3dly. It may arise, (and it but too often does,) from the too hasty delivery of the child, after the head has escaped through the os externum—here I would wish to caution the young practitioner against one of the most formidable errors that can be committed against sound practice, or just principles. For at this moment, the uterus has expended much of its power, in pushing the child thus far; and if some little time be not allowed it to recover its nearly expended strength before the body is hurried through the pelvis, it will be sure to increase, and perpetuate the inertia, into which it has just fallen from severe exertion: hence, we have always to apprehend a flooding, where the shoulders are expelled by the same effort that delivers the head; more especially, if the child be large, and the waters but very recently expended; or where the child is small, and the quantity of water great, and that but a short time discharged. Should this condition be accompanied with a partial separation of the placenta, an alarming hemorrhage will necessarily ensue; and if with an entire one, death may be the almost immediate consequence.

1176. When hemorrhage proceeds from either of the causes

just stated, it will be evident that nothing but the most prompt interference, and the employment of the most active agents, can prevail against so formidable an issue of blood, as now pours from the vagina. No time must be lost by temporizing; the woman will sink if not instantly succoured. Frictions upon the abdomen should be quickly commenced, and be actively pursued; doses of ergot—cold water poured from a height upon the abdomen, if the frictions do not very soon recall the contractile power of the uterus; and if much faintness from the loss of blood attend, a small quantity of moderately strong brandy and water should be given every few minutes, until this disposition is relieved: this will pretty soon follow its exhibition, if the means for re-exciting the uterus should be successful. Fresh air should be freely admitted, but the feet and legs should be kept warm by bottles of warm water or heated flannels; the ergot should be instantly given in small but frequently repeated doses; that is, five grains every ten minutes, for two or three doses. But should this not excite contraction promptly, twenty grains should next be given, and repeated again and again if necessary. It is presumed that during this time frictions upon the abdomen and other means would be employed.

1177. Since the last edition of this work, I have had several instances of flooding, in which I have had recourse to the ergot with entire success; I can therefore now, and do with much pleasure, add my testimony to that of others in its favour.

1178. But I must here repeat, that my great dependence is upon the abdominal frictions; having, so far, never known them to fail. Some practitioners have introduced ice* into the cavity of the uterus, under these circumstances, and it is said with success. I can say nothing upon the influence of this remedy from my own experience, and were I tempted to employ this substance, I should not judge it necessary to conduct it within the cavity of the uterus; from a belief, (not, however, I confess, confirmed by trial,) that it would be every way as effectual, if it were held in the vagina. I shall illustrate this condition by a case taken at random from a number of similar ones—for all these cases are so much alike, as to require but one general mode of treatment.

Mrs. —— was delivered by a midwife, after a very easy but

* Levret, I believe, was the first who had recourse to this remedy in the manner above stated, and it has since been recommended by others—it has lately been advised by Mr. Barlow.

rapid labour, of a healthy fine child—the placenta was very quickly expelled, as it was found, as the midwife said, loose in the vagina; a very profuse flooding immediately ensued, for the relief of which she attempted nothing, assuring the friends of the lady it was a common occurrence, and from which nothing was to be apprehended—but the patient becoming pale and faint, her friends were alarmed, and I was sent for in great haste. After my arrival I was informed that the patient had been delivered about twenty minutes, and the placenta had been extracted about fifteen of that time. When I came to the bed-side I was persuaded the patient was dead—no pulse could be felt, and for some time there was no respiration; syncope had just taken place. I instantly commenced a brisk friction upon the abdomen—ordered brandy and water by the tea-spoonful to be given with frequency; warm applications to be made to the feet and legs—the curtains to be opened, and fresh air admitted from the door and windows, and immediately sent for pills of the acetate of lead and opium. In the course, perhaps, of two minutes after the abdominal frictions were commenced, I had the satisfaction to feel the uterus beginning to harden under the hand, and every instant after, to acquire more and more firmness; in about ten minutes it was found much diminished in size, and much more solid—in the act of puckering itself up, a large quantity of coagula and fluid blood were expelled from the vagina, which so alarmed the ignorant midwife, to whom was consigned the task of watching the discharge, that she declared the woman must die if I did not desist from "rubbing the womb so violently;" but the cause of this poor creature's alarm was to me a great comfort, and only induced me the more steadily to persevere in the plan of irritating the uterus.

The disposition to syncope was now much lessened, and the pulse could, by a nice examination, be felt returning to the wrist—increasing in volume and force as the faintness diminished; and in about half an hour more the patient was considered out of immediate risk. To guard against a return of the flooding as effectually as might be, I directed two grains of the acetate of lead, and a half grain of opium, to be given every half hour; the frictions upon the abdomen to be renewed, should the uterus be found to relax ever so little; and for this end, a very intelligent lady present, was instructed to perceive any change of this kind that might take place—the brandy and water to be given only pro re nata; and the most perfect rest was enjoined, though

the position of the patient's body was a very constrained one. I again saw my patient in about two hours, (having given orders to be instantly sent for, in case of any unfavourable change before I returned,) and found her situation in every respect improved; she had had no return of hemorrhage, but was occasionally troubled with after-pains—her faintness had gone off entirely, and her system was reacting with considerable force—her position was now altered very much to her satisfaction; the brandy and water was stopped, and she was permitted, instead of it, to take a few spoonsful of tapioca, seasoned with lemon-juice and sugar, from time to time—the pills of the acetate of lead were directed once in two hours. From this time her recovery was as rapid as such a prodigious waste of blood would permit; milk was formed in sufficient quantity after rather a longer period than usual, and the only subsequent inconvenience she experienced was a headach; which almost invariably follows excessive uterine hemorrhage: this was relieved by keeping the bowels freely open.

f. VI.—*Where there is either a partial or complete Separation of the Placenta, and where the Body and Fundus are in a State of Inertia, while the Neck enjoys its tonic Powers.*

1179. This is the most insidious situation in which the uterus can well be placed; and it is one in which inexperienced practitioners lose patients more frequently than any other, after the birth of the child. The neck of the uterus enjoying its powers, at a time that both fundus and body are in a state of inertia, gives rise to such an accumulation of blood within the uterine cavity, as will destroy the patient, without its being suspected that such a discharge is going on—in this case, the hemorrhage will be concealed; for a coagulum blocking up the os uteri, will prevent either fluid blood, or coagula, from issuing; and as there is no apparent flooding, the inexperienced accoucheur rests satisfied that all is going on well: nor is he roused always from this state of security, until the patient is in articulo mortis; or when, perhaps, all human aid would be unavailing.

1180. This case should warn the practitioner of limited experience, against a false estimate of his patient's security; and should teach him never to fail ascertaining the state of the uterus, by a careful examination, through the abdominal parietes, as already advised. If, upon placing his hand upon the abdomen,

he find the uterus voluminous, but far from being hard; if, upon inquiry, he learn, that there is little or no discharge from the vagina; if he observe his patient become pale and faint, with a hurried breathing; if, upon touching the wrist, he find the pulse weak, frequent, or extinct; the skin cold and clammy, he may be pretty certain there is a concealed hemorrhage;* he has now not a moment to lose, to rescue the woman from an impending fate—he must be firm, prompt, and self-collected; and instantly put in practice every remedy that may promise relief.

1181. He should commence by abdominal frictions; and, if he find the uterus becoming harder in consequence, he should persevere, until he thinks it has acquired a disposition to contract—should the hardening of the uterus not be attended with a discharge of coagula, &c., from the vagina, he must conclude, either that the neck of the uterus is too resisting to be overcome by the contraction of the body and fundus, without farther aid, or that these are too feeble to overcome the resistance of the os uteri, though the latter may be comparatively weak—in either case, he must attempt to give to the uterus an increase of power, by removing its contents.

1182. This must be conducted with much cautious coolness, that the remedy must not increase the evil—the frictions upon the abdomen must be intrusted to some proper assistant, and they should be kept up with persevering constancy, while the practitioner carefully inserts his hand into the vagina—should he find clots there, he should remove them, if they are not immediately forced off by the effort which will, most probably, be excited, by the introduction of the hand.

1183. This being done, he is to insinuate finger after finger into the os uteri, and gradually attempt its dilatation; should it be very resisting, the resistance must be cautiously overcome; and if this be properly conducted, it will, perhaps, never offer such opposition, as to render any considerable force necessary—perseverance in a well-directed manner, I am persuaded, will be all that is necessary.

1184. When the hand has gained possession of the cavity of the uterus, the wrist should be so pressed against the side of the neck of the uterus, as to make room for the escape of any coagula or fluid blood, that may be disposed to issue—by managing

* I say, "pretty certain there is a concealed hemorrhage;" for I cannot say he may be altogether certain; since a rupture of the uterus may be attended with all these symptoms.

in this way, he may empty the uterus so gradually, as almost to ensure its subsequent contraction, and this will be much aided by the external friction. He is now to search for the placenta;* if it be but partially detached, he must cautiously separate the remaining adhesions—when this is done with care, and under the precautions above suggested, he is to remove it by rotating the hand now in possession of the placenta, against the internal surface of the uterus, until it manifest a disposition to contract; and then, and not till then, should the hand be withdrawn.

1185. Should the placenta be found entirely detached, it must be delivered with the same regard to uterine contraction. After the delivery of the placenta, pressure and friction should be continued upon the abdomen; nor must these be abandoned, until the contracted uterus give assurance of recovered energy.

1186. In addition to what has now been directed, the other remedies which have been suggested should be had recourse to—ergot, and cold applications, under the restrictions already proposed, should be tried—this case, and the one next to be considered, offer, perhaps, the best chances for the ergot; the brandy and water should not be omitted, if the woman be very faint, and much exhausted. The after-treatment will suggest itself; and after-symptoms must be treated pro re nata.

Sect. VIII.—8. *Of Flooding after the Expulsion of the Placenta.*

1187. When the placenta has been expelled, and is followed by flooding, the mode of proceeding is so similar to the last recommended, that it will require but a few words to make its management perfectly clear. In this kind of hemorrhage, like the one we have just been considering, it is necessary that the uterus should contract before it can possibly be arrested; therefore

* It may be well to observe that, in every attempt to separate the placenta, we should, before we commence the operation, fix the uterus as firmly as it can well be done, by the external application of the unemployed hand upon the fundus—in fact, it should never be attempted without this precaution; as the operation is not only very difficult, if this be neglected, but is also very uncertain—the woman, if possible, should be placed upon her back, as I have directed for other purposes. It may also be proper to suggest another caution connected with this operation, which is, that we be certain that we have removed the whole of the placenta; except in those cases, where it is expedient to leave a portion to the natural efforts of the uterus, as in the too adherent placenta. It is, however, sometimes almost impossible to determine this, where the placenta is lobulated, as now and then happens. See Leroux, Baudelocque, &c.

it will require the employment of all the means already pointed out for this purpose; and here, as in the other cases, I rest my great dependence upon abdominal frictions, the acetate of lead, ergot, cold applications, &c.

1188. Should the concealed hemorrhage take place, it must be treated much after the same manner as before the placenta is expelled;* (1179, &c.) that is, the hand must be introduced into the uterus, and the coagula suffered gradually to escape, while the uterus is gently stimulated by the hand passing cautiously over its surface; and when it is found to contract upon it, it may be slowly withdrawn; the after-treatment must necessarily be the same. This case, generally speaking, is of much less difficult treatment than where we have the placenta to contend with; and will always, so far as I have yet experienced, yield to the treatment proposed, provided a proper chance be given to their employment—it cannot be supposed they will be availing when the patient is in articulo mortis.

1189. It sometimes, however, happens, that a portion of the placenta is left, either entirely, or partially attached to the uterus, which will give rise sooner or later to hemorrhage—this may sometimes be immediately detected by the inspection of the placenta itself—at other times this will be found impossible; especially in those cases where we are under the necessity of bringing away this mass piecemeal—if this accident be discovered at once, it is best, I believe, to remove it, unless it should be a portion that is too adherent. Should this not, however, be discovered before the uterus has contracted firmly upon it, it will be much better to suffer it to remain, and trust to nature for its expulsion, than to run the risk of provoking a flooding; exciting a great deal of pain, or of producing inflammation. But should flooding attend, we must deliver the retained portion, and this can almost always be done, as the mouth of the uterus is generally found open or yielding when hemorrhage attends; but should it be found otherwise, it must be trusted to the ergot, &c.

* This case is sometimes very suddenly fatal. I was once called by a midwife, to visit one of her patients; but upon my arrival, I found the woman dead. The midwife was much surprised, and could not account for her death; as "the labour was natural and easy, and the placenta had come quickly away." I told her my suspicions of the case; and these were afterwards confirmed, by opening the body—the whole cavity of the uterus was filled with blood, and distended to nearly the size of one at the full period of gestation—the mouth of the uterus was found sufficiently closed to retain the blood discharged from the surface to which the placenta had been attached.

1190. The retained portion of the placenta sometimes may not, however, be suspected for several days after delivery; but we have a right to conclude that it is retained, when there is frequent return of pains, and a discharge of coagulum after coagulum from the vagina, followed by fluid blood upon each relaxation of the uterus. When the discharge of fluid blood happens in quick succession, and in weakening quantities, we should immediately attend to the condition of the uterus: if it be found sufficiently yielding to admit the hand, it must be carefully introduced, and the portion detached, and withdrawn.* We may sometimes succeed in detaching it by insinuating a couple of fingers into the uterus, and moving them in a circular manner between it and the placenta, so as to loosen it, and then remove it either by hooking it with the finger, by the natural efforts of the uterus; or by the small crotchet recommended for the removal of the secundines in cases of early abortion. If neither the finger nor the crotchet succeed, we must trust to nature; taking care to keep the discharge in subjection by the tampon.

1191. The young practitioner is cautioned against treating this case with indifference; it is one not unfrequently attended with danger, and sometimes death has ensued very quickly, as La Motte and others assure us. Should he be doubtful of his own judgment in this case, let him, by all means, (as well as in every other case of danger,) request the advice of an older practitioner.

Sect. IX.—9. *On the Means for preventing Flooding.*

1192. Having considered at some length the hemorrhages which may take place during pregnancy, and such as may follow delivery, let me say a few words upon the mode of preventing those which may succeed to labour, as I am of opinion that much may be done to this purpose. From what has been said, it will be evident, that whatever interrupts the tonic contraction of the uterus, or produces its relaxation after it has contracted, will occasion a flooding; provided there be a separation of a part, or

* Baudelocque tells us he has known this kind of hemorrhage show itself on the tenth day, and has been obliged to pass the hand into the uterus, to extract it. (System, Vol. II. p. 27.) I am, however, disposed to think, that in cases of this kind, the ergot would be the better remedy; it should be tried, at least. It is true, that this opinion is founded upon its success in a single case. But analogy is so much in its favour, independently of this, we must repeat it, it should be tried; it may save both time and pain.

of the whole of the placenta: it is equally evident, that whatever will ensure this contraction, or contribute to it, will either prevent or diminish hemorrhage from this part. Much, then, will depend upon the manner in which the last stage of labour is conducted, to ensure the future contraction of the uterus.

1193. This subject has been treated by Dr. Denman with much apparent interest; but his advice upon this point is not conformable to my own experience. I shall quote his directions in his own words. The doctor says, "When I had been attending women who were prone to violent hemorrhages after the birth of the child in former labours, I have made it a rule to keep them in an erect position till the waters were discharged by the spontaneous breaking of the membranes, and the child was on the point of being born. By this method it appeared clearly to me, that the uterus acted more favourably, the placenta came away more naturally, and the quantity of blood lost was often much more diminished."*

1194. Now, I ask any one at all conversant with the economy of the uterus, during, and after labour, how an erect position, the sudden evacuation of the waters at the moment "the child was about to be born," can contribute to the only circumstance at all available in the case under consideration; namely, the permanent contraction of the uterus? In the first place, an erect position will always be attended with a quicker circulation than a recumbent one; and will permit the waters to escape with more suddenness and rapidity; consequently, the risk of atony must be increased. It is admitted, upon all hands, and among these, by Dr. D. himself, in other parts of his works, that if the uterus be too suddenly emptied, there will be a risk of inertia, or, at least, of great irregularity of action: if this be so, how can the interest of the woman be improved by this practice?

1195. All writers upon midwifery declare, that the sudden evacuation of the waters, and the delivery of the child almost at the same instant, are the most common causes of the atonic state of this organ: yet we are advised by Dr. D. to encourage these events, with a view to prevent it! So far all theory is against it; and I will now appeal to experience to prove it to be, at least a doubtful practice.

1196. There was a period of my life at which I looked upon Dr. Denman to be the highest authority in midwifery; and at

* Introduction to Midwifery, Francis's ed. p. 494.

that time almost implicitly followed his instructions upon every point of practice; and consequently upon the subject in question. But in doing so, I was persuaded, from sufficient trials of the plan, that it not only did not answer the end for which it was proposed, but that it was decidedly mischievous; I, of course, abandoned it as soon as I was convinced of this truth; and substituted one almost diametrically opposite; and with which I have every reason to be satisfied. As it was impossible to determine, à priori, which patient might be attacked with a flooding after delivery, it became necessary to follow some general rule with all, (where practicable,) by which the risk of this accident should be diminished.

1197. It therefore suggested itself that whatever would ensure, with most certainty, the tonic contraction of the uterus, would best guard the patient against the contingency of a flooding; and what appeared to me the most rational to ensure this, was to take off the distention of this viscus as gradually as possible, by the early evacuation of the waters; to diminish the force of the circulation as much as was practicable, by making the woman preserve a horizontal posture when the pains became urgent; and to interdict stimuli of every kind, as wine, or any other liquor, heat, and all unnecessary exertion.

1198. But let me make myself understood, when I say "the early evacuation of the waters." It is a fact notorious to every practitioner, that the membranes, if left to be ruptured entirely by the force of the uterus, would remain entire in many, and, perhaps, in most instances until the child was about to be pushed through the os externum. Now, were this plan to be pursued, the uterus would be suddenly instead of gradually emptied; and consequently the risk of flooding would almost necessarily be incurred. But if, instead of this, we rupture the membranes as soon as the labour is active, and the os uteri sufficiently dilated, or easily dilatable, we should give opportunity and time for the uterus to contract before the child would be expelled, and thus guard against the evil we are apprehending. The uterus would, by this plan, diminish in size in the exact proportion to the water displaced; it would apply itself to the whole surface of the child, the inequality of which would serve as an important and healthy stimulus, (all things being equal,) and excite it to more certain contraction.

1199. Daily experience proves the justness of this reasoning and practice; for how rarely do we see a flooding follow those deliveries where the liquor amnii has been discharged even a few

hours previously!—and what can produce the exemption from this accident, but the uterus having had sufficient time and opportunity to contract? It is true, that this alone may not always be sufficient to protect the woman against a hemorrhage, but I am convinced, from many years' experience, it is the principal one.*

* I have, within the last few years, given the secale cornutum a short time previously to the delivery of the child, with the happiest effect. It was given, as declared, in the following case:—

Mrs. ——, aged thirty-three years, in labour with her seventh child. One of her friends informed me, that she had always been liable to flood excessively very soon after the expulsion of the placenta; and that with the child before the present one, she had been nearly exhausted by the profuseness of the discharge. To prevent a recurrence of this, I prescribed the following mixture:—

℞.	Pulv. Secale Cornut.	ʒss.
	Sacch. Alb.	ʒiss.
	Aq. Cinnam. simp.	ʒj.——M.

Of this, one-third was given every twenty minutes, about an hour before the child was expected to be born. The child was delivered in three-quarters of an hour after the first dose. The placenta was soon detached, by the efforts of the uterus alone; and was found to be firmly contracted, immediately after. No flooding supervened—indeed, nothing but a moderate lochia followed.

Mrs. ——, aged twenty-six, of rather a leucophlegmatic habit, and excessively afflicted with fluor albus, had with her first child a painful, but active labour of about three hours' continuance. Very soon after the delivery of the placenta, excessively severe after-pains began, accompanied by a pretty profuse discharge of blood and coagula. These were repeated in very quick succession, until she became very faint, and much exhausted. I gave her five grains of the acetate of lead, and sixty drops of laudanum; frictions were made upon the abdomen. In half an hour the sugar of lead was repeated, with much advantage; the pains and discharge were now much abated, and the uterus remained pretty permanently contracted. I, however, ordered, in case pain continued, to repeat the laudanum, without the sugar of lead. She remained very weak for a number of days, as she had lost a great deal of blood.

Her second, third, and fourth labours, were followed by the same disagreeable consequences; for in each of which the uterus relaxed itself, after the expulsion of the placenta, after having been firmly contracted for half an hour. With her fifth labour, May 24, 1827, I resolved upon putting in practice the early rupturing of the membranes, and the exhibition of the ergot. After her pains became active, I ruptured the membranes, though the uterus was not fully dilated. In about an hour the os uteri was entirely expanded, and the labour advanced with considerable rapidity; about twenty minutes before I expected delivery would take place, I gave her five grains of the secale cornutum, and repeated it in ten minutes, and in ten minutes after I gave ten grains more, making twenty grains altogether. Delivery now ensued; the placenta was spontaneously thrown off in twenty minutes, unattended by flooding, and followed by very little pain. I waited an hour and a half, but no hemorrhage took place. Thirty drops of the black drop had been given immediately after the first after-pain, and this was followed by twenty more. The after-pains ceased, and the lochial discharge was

The directions given for the delivery of the body of the child, after the head has escaped, and the abdominal frictions, must also be considered as matters of great moment, and should never be neglected, especially with women who are "prone to flood" after delivery.

CHAPTER XXXII.

OF THE ASSISTED DELIVERY OF THE PLACENTA.

1200. The tonic contraction almost exclusively detaches the placenta from the uterine surface, in order that it may be expelled. This takes place at various periods after the delivery of the child, as the tonic power of the uterus may be in greater or less perfection, or as the connecting medium of the placenta and uterus may be more or less dense—it will, therefore, be found, that the placenta may be cast off immediately after the expulsion of the child, or it may require some time to effect this end, without our considering it to be a morbid adhesion of this mass.*

very moderate; in a word, she was better on the third day than she had been previously at the end of a fortnight.

I have delivered this lady four times since May, 1827—in each labour the same precautions were used, with similar happy results. I am of opinion, that were this lady neglected after delivery, she would most probably die from hemorrhage; for with even attentions sedulously pursued a strong tendency to relaxation is constantly perceived in the uterus, for the first hour after delivery. MM. Trousseau and Maisonneuve, in a late paper in the Bulletin Général de Therapeutique on Menorrhagia and Metrorrhagia, deduce the following conclusions on the action of the ergot in these complaints. "1st. That the ergot of rye exercises on the uterus a powerful, but transitory action. 2d. That this action chiefly concerns the fibres of this organ, and determines their contraction. 3d. That the state of the uterus in no respect influences the production of the pains. 4th. That the pains are observed even when a part of the neck of the uterus is affected with cancer. 5th. That the ergot acts on the centre of the nervous system as a narcotic. 6th. That the resulting phenomena are slow, but durable. 7th. That they are never dangerous when we confine ourselves to combat the menorrhagia. 8th. That the dose may without danger or inconvenience be carried to several drachms, in the course of four or five days. 9th. That in the treatment of menorrhagia, divided doses, given at equal intervals, are to be preferred. Lastly. That we need be under no apprehension of commencing with a drachm dose, divided during the first twenty-four hours."—*American Journal of Medical Sciences for Aug.* 1833, p. 515.

* We may remark, in general, that the time the uterus requires to throw off the placenta, is in some measure indicated by the state of the fœtal circulation—if this

1201. It is desirable at all times, that the placenta be expelled pretty quickly after the child. And if this do not take place spontaneously in due time, it is proper that we should give such assistance as will facilitate its exit, without the introduction of the hand. There has been much diversity of opinion, what period or interval, constituted "the proper time," for the extrusion of the placenta—some fixing a longer, and others a shorter term, much to the embarrassment of the young practitioner—but this point, I conceive, is easily settled, by taking the indications from the condition of the uterus itself, and not from the number of minutes or hours which may have elapsed.

1202. I have always objected to making "time" the criterion for action in midwifery; and my aversion is by no means abated when an attempt is made to make it a rule for the delivery of the placenta; for the same objections must obtain here, as in the cases I have already declared it should not govern in. I have stated (1200) by what power the separation of the placenta is effected, and that it would necessarily require a longer or shorter interval, as the agent may be more or less active. It will follow, then, that the expulsion of this mass may be either very prompt, (1200) or be rather tardy; I have already pointed out the duty of the accoucheur in the first instance, and the mode by which he is to execute this duty, (556;) I shall, therefore, in this place, only consider what is to be done in the latter case.

1203. I have stated, in effect, (1200) two principal causes for the tardy separation of the placenta: namely, 1st. A diminution of the tonic power; and, 2d. Too great a firmness in the connecting medium of this mass with the uterus; each of which requires a little difference in management. The first of these may be known, 1st. By the uterus being rather larger and softer than it should be, a short time after delivery; 2d. By no portion of this mass being within reach of the finger when introduced into the vagina; 3d. By there being no return of the alternate contractions of the uterus; and, 4th. When a force is applied to the cord, it gives the idea that the placenta is descending; but this being fallacious, for so soon as we cease to draw upon the cord, it instantly mounts again into the pelvis.

be quickly interrupted after the birth of the child, the placenta will be detached soon; if the circulation continue, it will require more time. This may be easily understood; as either of these circumstances betrays the want of proper force in the tonic contraction, or that it enjoys to a proper extent.

Sect. I—1. *Mode of acting in Retention from want of Tonic Power.*

1204. When this state of things presents itself, all attempts to deliver the placenta must be forborne, until we have by properly instituted frictions over the region of the uterus, obliged it to contract and harden itself under the hand; and at the same time retire lower into the pelvis—when these alterations show themselves, we almost always find they will be accompanied by pain; and, if we now co-operate in a proper manner, we shall find the placenta to arrive within reach of the finger, and announce its separation by a small discharge of fluid blood, or coagula, or both, and fall into the vagina, from whence it may be extracted, as has been directed, (556.)

Sect. II.—2. *Retention from too firm Adherence.*

1205. In the second case, (1203) we shall find the uterus reduced in size; firm and pretty well sunk in the pelvic cavity; and may be even attended with pain, without bringing the placenta within reach of the finger, and if we draw upon the cord as in the other case, there is little or no retraction after we intermit the force.

1206. This case requires, for the separation of the after-birth, not only a firmer contraction of the uterus, but a longer continuance of it; as well as a particular application of force to the placenta itself, by means of the cord. Force, to be successfully applied for the separation of the placenta, must be directed in such a manner, as to act perpendicularly to its surface; or its influence will be destroyed—to effect this, we must first ascertain the part of the uterus to which this mass adheres. This is to be known by observing the part of the pelvis to which the funis seems inclined; as this will point out the portion of the uterus to which the placenta is adherent—thus, if the cord descend behind the symphysis pubis, the placenta will be attached to the anterior part of the uterus; if before the projection of the sacrum, it will be found at the posterior part of the uterus; if to either side, the placenta will be at the side on which the cord is found.

a. Mode of acting in this Case.

1207. Having ascertained the location of the placenta, we must so arrange a couple of fingers within the vagina, that drawing the cord horizontally will act in the desired direction upon it; that is, if the placenta be attached to the anterior portion of the uterus, we place the cord behind the fingers, and press it back towards the projection of the sacrum, while we draw the cord with the other hand; if to the posterior portion, we place the cord before the fingers, and carry it as high as we can well reach, towards the superior strait, and then draw with the other hand; if placed at the lateral portions, we must introduce the fingers of either the right or left hand, as it may be the right or left side of the uterus to which the placenta is attached, and then place them in such a manner that the horizontal drawing will act in a proper direction—if the placenta be at the left side, we must introduce the fingers of the right hand, and vice versa. By acting thus, we may succeed in bringing down a placenta, which, without it, might require the introduction of the hand.

1208. In this situation of the placenta, (1203) we are almost certain to have the co-operation of the alternate contractions of the uterus; and it is proper that we take advantage of them, by making gentle exertions by the cord at the same time; if no pain come on, we should solicit the farther contractions of the uterus, by frictions and moderate pressure upon it, while we gently and steadily pull at the cord. We should now and then ascertain if the placenta is descending: this is best done by slacking the tractive force; and then observe whether the cord remounts, or whether it remains stationary. If it ascend, we may be certain that the placenta is either not detached, or that the uterus is not aiding in its expulsion—in such case, we should be very careful that the degree of force applied to the cord, be not sufficient to destroy its union with the placenta; and that we do not urge its deliverance too importunately.

1209. If we find the cord not to remount, or if it remount but very little after we have ceased to draw, we may be assured the placenta is descending, and will occupy more or less of the vagina; from whence it may be easily extracted, as it is now within reach of the finger.

1210. It very rarely happens that the introduction of the hand is necessary to deliver the placenta, in the situations I have just

described; method and address, are all that are required to overcome the existing difficulties: and, perhaps, there is no other condition of this mass, in which it has been so often, and so wantonly, dragged from the uterus, because a little resistance was offered by the causes just stated. It would seem to be a sufficient reason with very many inexperienced practitioners, to introduce the hand for the delivery of the placenta, because it does not immediately precipitate itself into the vagina after the birth of the child; or does not instantly obey the force that is applied to it; however ill-directed, or inopportune, that attempt may be.

1211. Or if the practitioner be timid, and obey a direction but too common in books upon this subject, that a certain period of time must elapse before any attempt be made to deliver the placenta, he may let the proper moment elapse for the successful application of a well-directed force, and thus convert a case of great simplicity into one which will require the aid of art.

1212. I say, that the time for interference of the accoucheur for the delivery of the placenta, should always be regulated by the condition of the uterus itself; and that condition is, whenever it is firmly contracted—this rule I believe will never deceive; or, at least, I have uniformly acted upon this principle; and so far, I think, I am safe in saying, I have not had cause to believe it wrong. I acknowledge that some address is required for the successful delivery of this mass; but as this is easily acquired by a proper attention to the laws, by which it is expelled, I should hold that man in some measure accountable, if he produced mischief, by an improper, or ill-directed manœuvre. Time, simply considered, can never form a safe rule for the delivery of the placenta; the *degree of contraction of the uterus*, alone, can point out the proper moment to operate, or teach us, when it would be improper to attempt it.

1213. I am decidedly of opinion, that the necessity for artificial delivery of the placenta is often created by obeying a rule taken from time, let that period be longer or shorter; for time in itself, can neither produce the conditions required, nor command them if they be absent. For the uterus may be disposed to throw off the placenta, and it would do so if properly aided, long before the fixed period may arrive; or it may be in a state of such feebleness at that moment, as to render it highly dangerous to attempt it—hence, on the one hand, an injury may be done to the uterus, by the manual delivery of the placenta, by the resistance which it now offers to the attempt; or the woman be exposed to

a severe and perhaps a fatal hemorrhage, by our acting at the limited moment; it is, therefore, improper to permit the uterus to contract by improperly delaying the moment to act, so as to enclose this mass, and require force to open it; or by inattention to its state of imperfect contraction, to induce a flooding, by acting, because a specified time has elapsed.

1214. Should a portion of the placenta be separated, and a flooding accompany these conditions of the placenta, it must be treated as directed for this case, (1147, &c.)

Sect. III.—3. *Of the Delivery of the Encysted Placenta.*

1215. In consequence of the contraction of a portion of the body of the uterus, before the placenta is delivered, it is sometimes confined in a distinct apartment, as it were, of this organ; and this, agreeably to my own experience, is always at the fundus. The mechanism of this accident is easily understood, if we recollect the strong disposition the body, and especially its lower part, has to contract, or narrow itself, when the distending cause is removed; and especially while the placenta remains undelivered.

1216. Some have thought this contraction could take place only when the placenta was attached to the side of the uterus; and others, only when it adhered to the fundus; of this last opinion was Baudelocque; and it entirely comports with my own experience of this condition of the uterus—indeed, I might say *limited experience;* for such it truly is; as I have very rarely met with it; and never, so far as my recollection may be depended upon, when I have had the entire management of the case. Dr. Douglass, of Dublin, has considered this condition of the uterus altogether artificial; or arising from some irritation near the mouth of this organ; either by acting upon the cord, or by the introduction of the hand.

1217. He says, "the exciting cause of the uterus assuming the hour-glass form is irritation, produced either in the vagina by injudicious pulling at the umbilical cord, or in the cervex uteri, by the accoucheur's hand, searching there in vain for the placenta."

1218. "That the proximate cause is a spasmodic constriction of the muscular fibres of the uterus at the lower verge (not the centre) of that section termed its body, and just where it ceases to be thickly muscular."

1219. "Thence I conclude," says the doctor, "that this hour-glass contraction is not produced by any principle of action inherent in the uterus itself, and that whenever it does occur, it is caused by mismanagement."

1220. "Therefore, in order to avoid such occurrences, the practitioner should always refrain from exciting unnecessary irritation."

1221. "And in those cases of unavoidable retention of the placenta, wherein it may be necessary for the accoucheur materially to interfere, he should, having cautiously inserted it within the vagina, push his hand briskly up to the very fundus of the uterus. And in this operation, he should direct the hand forward towards the umbilicus." This case is seldom or never attended by hemorrhage.*

1222. This case may be known by the fundus of the uterus reaching higher than common; by its being smaller in its transverse direction, as can be detected through the abdominal parieties; by an elastic feel of the cord; by no pain attending; by the placenta not being within the reach of the finger; and if upon the introduction of the hand, the cord is found to pass through an aperture of greater or less size, and the placenta felt to lie within the cavity formed by this contraction.

a. Mode of operating in this Case.

1223. In the hour-glass contraction of the uterus, it becomes always a matter of necessity to operate, and this should be undertaken as soon as this situation is ascertained; as I believe no advantage has ever been derived from waiting. It is in vain the action of the uterus is solicited; or that force, however well directed, be applied to the cord; nothing but the introduction of the hand, and that made to pass the stricture, can relieve the placenta from its confinement.

1224. The woman should be placed upon her back, as directed for turning, (732,) or the application of the forceps, (755;) the hand must be cautiously introduced into the vagina, and forwarded agreeably to the direction of the cord, which should be taken always for a guide. This will be found passing through an

* I was called not long since to a case of this kind, in which as I was informed by the gentleman who had charge of the case, that the patient had suffered a considerable loss of blood—this appeared to have been the case, as I found the patient was very much exhausted on my arrival—she, however, did well.

aperture of uncertain size; sometimes larger, sometimes smaller; into which the fingers, one after the other, must be introduced, and its dilatation gradually effected, until the whole hand is enabled to pass the stricture.* When the hand has possession of the chamber which contains the placenta, this mass must be separated carefully if it be adherent,† or if loose, it must be seized with sufficient firmness to secure its following with the hand when this is withdrawn.

1225. Some little management is required in withdrawing the placenta, or rather in the mode of seizing of it—it must not be grasped by the whole hand, and kept in it by contracting the fingers; for its bulk, with that of the hand, will exceed the opening through which it has to pass. This is not an unusual predicament, and has sometimes been attempted to be overcome by force, to the discomfiture of the operator, and the serious injury of the patient.

1226. During the introduction of the hand into the uterus, and especially while contending with the stricture, the uterus must be firmly fixed by the other hand being pressed upon its fundus, until possession is taken of the placenta, and the hand is about to be withdrawn. After the after-birth is delivered, I have thought it best to re-enter the uterus to the very fundus, so as to be certain that neither a portion of the placenta, nor coagula are left behind.

1227. This operation is always to be slowly and cautiously performed, as the woman may be much endangered by a contrary practice—she may, by rudeness and want of tact, be liable to subsequent inflammation of the uterus, or its immediate rupture. It is to the patient always an operation of severe suffering, however well-conducted, unless the stricture resists but very moderately; therefore, to add to it by rudeness or mal-adroitness, is both cruel and dangerous.

* We do not recommend the direction just given by Dr. Douglass, (1221,) "to push the hand briskly up to the very fundus of the uterus." On the contrary, this operation should be deliberately and cautiously performed, or much mischief may ensue; for such is the resistance sometimes offered by the constriction, that it would require much force to overcome it, especially if it be suddenly applied. And if suddenly applied might injure the connexion of the uterus with the vagina.—See pars. 1226, 1227.

† Dr. Douglass says, it is always found adherent, or rather that it is never found detached. (*Observations on the Hour-Glass Contraction of the Uterus*, p. 10.) Dr. Ramsbotham says, that it is generally found detached, (*Practical Observations*, Am. ed. p. 144,) and this comports with my own observations.

SECT. IV.—*On the enclosed and partially protruded Placenta.*

1228. It sometimes happens that the placenta is confined in the uterine cavity, though detached from its surface, in consequence of the sudden contraction of the mouth of the uterus. It would, perhaps, be difficult to assign the reason of this disposition in the mouth of the uterus to close, before the placenta is expelled—it may arise from some peculiar stimulus, or from some preternatural irritability of this part of the organ, over which we have no control.

1229. This situation of the uterus and placenta may be known by the latter being unusually long detained, when, from the hardness and well contracted condition of the former, we should not have anticipated such delay; by the force applied to the cord, not making the placenta descend; by an absence of hemorrhage; nay, almost of discharge; by the contracted condition of the os uteri, by the placenta being felt when the finger is passed through it; and by the absence of pains.

1230. It would be in vain to attempt the delivery of the placenta by any exertion made upon the cord, though this is almost always resorted to; and as the whole of the uterus will sink lower into the pelvis by this effort, the inexperienced practitioner imagines that the placenta is descending—he continues his traction under this illusion, and thinking a little more force will overcome the difficulty, he multiplies it; the cord is ruptured, and his difficulties are increased—he now becomes alarmed; and the panic spreads to the patient and her friends; every thing is thrown into confusion; a consultation is demanded, and a rival practitioner robs him of the little reputation he may have acquired, and thus interrupts his progress in business. Or, fearing the consequences a discovery of this accident might produce, he disingenuously conceals it; and attempts, without method, the delivery of the imprisoned placenta, to the immediate torture and the subsequent injury of his patient. Not knowing exactly what causes the delay, or the nature of the difficulties which oppose him, after excruciating his patient, by unavailing efforts, he, in a paroxysm of mental anguish, abandons her, and declares the case must be left to nature.

1231. The modes of proceeding in such cases, are, 1st, to recall the contractions of the body and fundus by the exhibition of the ergot in common doses; and, 2dly, should this not succeed within

an hour, the uterus must be gently entered by slowly dilating the os uteri, and the placenta removed—this, if carefully and methodically attempted, is not so difficult as might at first be imagined. The woman should be placed as directed for turning, (732,) and during the passage of the hand through the os uteri, the uterus should be firmly supported as suggested, (1226.)

1232. I have ventured to suggest the exhibition of the ergot in this case rather from analogy, than experience—as in a case of retained placenta, after a premature labour of the seventh month, and another under similar circumstances at the sixth month, I happily procured the expulsion of these masses by this remedy.*

1233. As a general rule, I am of opinion, that the sooner we operate, all things being equal, the better, as the obstinacy of contraction is in proportion to the lapse of time, unless the alternate contraction of the uterus come in to our aid.

1234. There are three other situations of the placenta, which may be regarded as varieties of this case; the first is, where a small portion of this mass is pushed through the os uteri; the second, is where about one-half has escaped; the third, is where the greater part of this mass is without the mouth of the uterus. In all these instances, the farther progress of the placenta is prevented, by the os uteri firmly embracing it; at least so firmly as to render the attempt to relieve it by the cord, not only fruitless, but, perhaps, mischievous, by causing its rupture.

Mode of Acting in each Case.

1235. If the placenta be found in the first situation enumerated, (1234,) we may procure its descent, by employing the crotchet recommended for the delivery of this mass, in cases of flooding from abortion, (see figure in Treatise on Diseases of Females, chapter on Uterine Hemorrhage, by the author,) or by dilating the os uteri as recommended, (1224,) first pushing up the protruding portions.

* I must, however, observe, that I have no doubt of the sufficiency of the "ergot" to procure the discharge of the placenta after the birth of a child at full time, though I cannot give a proof of it. The analogy between the two cases under consideration, is too strong to admit a doubt upon the subject, though the occasions for the employment of this article, will, from the very nature of the economy of the uterus, be much more rare in cases which arrive at full time than those in which delivery takes place prematurely.

1236. For the second condition, the hand must be introduced into the vagina, and a finger passed under the edge of the os uteri, by which successive portions of the placenta must be hooked and brought downward, until the whole is relieved.

1237. In the third instance, all that is required is, the introduction of the hand into the vagina, and the firm seizure and compression of the placenta, as near the os uteri as possible; compression near the stricture diminishes the bulk of the placenta so much as to permit it to escape, by drawing the whole mass toward the os externum.

1238. The cases I have just described, are far from being uncommon; and few offer greater embarrassment to the inexperienced practitioner. The cause of the detention of the placenta in many cases is not sufficiently well understood, or sufficiently early ascertained, to render them free from risk. I, therefore, recommend to the young practitioner, to search for this mass whenever any unusual delay in its delivery takes place, though the case be not attended by flooding, or other accident, provided he has previously put in practice all the means which are usually essential to its expulsion, and they have failed; or, having waited until the condition of the uterus, as ascertained by the hand through the abdominal parietes, gives evidence that it has contracted sufficiently, if not successfully.*

Sect. V.—5. *Of the Delivery of the Placenta, when the Cord is broken or is very feeble.*

1239. An undue force applied to the cord with a view to deliver the placenta, may rupture the funis; hence, the important caution, of not applying too much. It sometimes happens, however, that a very moderate force will destroy its connexion with the placenta—this may arise from a weak state of this production, though it may be sound; it may arise from a morbid condition of it, or from its being in a state of putrefaction.

1240. Those who are in the habit of seeing many cases of midwifery, can pretty well judge of the firmness or strength of

* For the mode of acting in "placental presentations," under all their various forms, see chapter on "Unavoidable Hemorrhage;" for the plan of proceeding in hemorrhagy from a partial separation of the placenta; for the rule of conduct where it is too adherent, and attended by flooding; for rules to be observed in hemorrhage from atony of the uterus after separation of the placenta, &c.; see section on "Hemorrhage before the Placenta is Expelled," &c.

the cord, so soon as they see it; and will regulate their endeavours to extract the placenta by it. When the funis is frail, or very tender, it should never be used as a means to deliver the after-birth; it should always be preserved as a guide for the hand, should it become necessary to enter the uterus. The rupture of the cord in itself, does not necessarily create difficulty; since, if this part be very delicate, we do not employ it in our attempts, to free the uterus of the placenta—therefore, in such cases, the placenta derives no advantage from its preservation, as regards its unaided delivery; but it may be of important service, should it be necessary to relieve it by the hand.

1241. It will follow from what has been said, (1240,) that it is not always necessary to make an artificial case of a ruptured cord; for the expulsion of this mass is nowise promoted by its preservation, if the cord be too feeble to act with it; delivery, therefore, in such case, must depend upon the spontaneous efforts the uterus makes to clear itself of this burden, and not upon any force that may be applied to the funis.

1242. But, though the preservation of the cord may not aid us in our attempt to deliver the placenta when it is too tender to be an agent, yet it is highly important, notwithstanding, that it should be carefully preserved; especially as we cannot determine à priori, the cases in which it may be necessary to deliver this mass, artificially; for, during its continuance within the uterus, some accident may attack the patient, and render it indispensably necessary to interfere and hasten its delivery.

1243. It may, however, be remarked, as a general rule, that the placenta is longer in descending when we cannot aid it by the cord, or when the cord is separated from it, than when it is strong and preserved—the reason is obvious. We should, therefore, in such cases, promote the contraction of the uterus by frictions; and, from what I have experienced of the action of the ergot, (1221,) I should be induced to give it a trial before I would pass the hand into the uterus; for the hand should not be introduced until it has been satisfactorily proved that the ergot had failed.

1244. Should we not succeed by these means in relieving the uterus of its burden; and, especially, should any accident complicate this period of labour, we must introduce the hand, and deliver the placenta. The difficulty in this case is no greater than in common cases, provided the cord, (however feeble it may be,) is preserved, since this will, with proper management,

conduct us to the placenta, as certainly as a stronger one—but if it be separated, a great deal of embarrassment may be sometimes created, by not being able to distinguish the placenta from the uterus, if this mass be not detached; if it preserve its connexion with the uterus, the unskilled hand will find much difficulty in distinguishing it from the surface of this organ.

a. The Signs by which the Placenta may be detected.

1245. The following marks will, however, lead to the detection of the placenta: 1st. If the fingers pass over the internal surface of this body, its vessels, distended by blood, will generally be distinctly felt. 2d. If the placenta be pressed by the fingers, the woman will scarcely perceive their presence; whereas, if the uterus be touched, she will complain. 3d. If the hand be placed over the uterus, externally, opposite the one within the uterus, the thickness of the parts will declare, whether it be the placenta which interposes between them, when this mass is on the anterior part.

b. The mode of acting in this Case.

1246. When it is ascertained that the hand is in contact with the placenta, the latter must be cautiously separated from the uterus, by insinuating the fingers between them. There is sometimes a difficulty in getting behind the placenta, in consequence of the membranes interposing between the hand and the surface of the uterus. To overcome this hinderance, the hand should be placed behind the membranes, and then permitted to travel up to the placenta itself, and effect the separation.

1247. Should the placenta be found loose in the uterus, it must be taken hold of and withdrawn.

1248. I have a few times met with difficulty in the delivery of the placenta from its excessive size. These instances have uniformly occurred in cases of premature delivery, or rather where the delivery was not premature, but where the child had died some time before its birth. In the particular cases alluded to, the children were not found putrid; but, on the contrary, were hard and rigid, though a little swoln; the funes were always much enlarged, very tender, and engorged with a brown blood; the placentæ were found in these cases to distend the uterus so much, as to give the suspicion, to those unacquainted with the nature of such cases, that there was a child remaining in the uterus.

1249. In looking over my records of these cases, I do not find one that did not require the introduction of the hand for its deliverance; and, in two of these, the placentæ were so enormously large, as to nearly fill a common-sized chamber pot. This prodigious increase appeared to be owing to the infiltration of water into the meshes of the placenta. In all the cases of the kind now under consideration, no aid was derived in the delivery of the placentæ from the funes, as they were uniformly found so frail as not to permit any force to be applied to them.

CHAPTER XXXIII.

OF PUERPERAL CONVULSIONS.

1250. This truly frightful disease may attack a woman, perhaps, at any period of utero-gestation; but more frequently after the sixth month. Dr. Lyman says, "it seems to be a question with some writers, whether the disease we are considering ever attacks antecedently to labour. I believe we may very safely answer this in the affirmative. I do not recollect having seen it earlier than the latter part of the seventh month."*

1251. I do not recollect at this moment having met with any writer who has questioned the liability of the pregnant woman to convulsions. I am certain this opinion must be wrong, as I have witnessed a number of cases of convulsions where labour was not present, and where there was no reason to believe this process had any agency in their production.† That women are much more liable to this disease when this process is about to commence; or after it has advanced, is agreeable to all observation; and that labour frequently follows a few days after, as Dr. Lyman observes, is equally true: for we believe with him, that the parturient effort has very often, either a direct or indirect agency in their production; or, in other words, is the exciting cause. The causes assigned for convulsions have been various: some have supposed they arise from some peculiar irritation of the uterine fibre from pregnancy; others considered them truly epileptic; while others regard them as nervous, or hysterical.

* New England Journal, No. IV. Vol. III. third Series, p. 344.

† See Note to case 8th.

1252. This difference in views, necessarily leads to a difference in treatment—the first, makes safety consist alone in immediate delivery; the second, forbids the practice; while the third, relies upon the use of opium. From what I have seen of this formidable complaint, I am persuaded, that there is no one cause constantly operating to produce puerperal convulsions; nor is there any one mode of cure applicable to all cases. To be successful in the management of this complaint, it is necessary that attention be paid to the species of this disease, with which the woman may be attacked; I have, therefore, from a conviction that they do not all depend upon one and the same cause, divided them into, first, epileptic;* second, apoplectic; and third, into the hysterical; each of which may attack under two distinct conditions of the uterus, and requiring from that circumstance a difference of management.

1253. Convulsions are almost always preceded by symptoms which denote their approach; in the epileptic species, the premonitory symptoms may exist a number of days before convulsions show themselves; it is uniformly attended by a strong determination to the head, producing an engorgement of the vessels; hence, headach, of greater or less intensity, ringing of the ears, a temporary loss of vision, giddiness, &c., are always present before the convulsive stage shows itself. From these symptoms being followed by convulsions, I have always, when consulted upon such occasions, advised the immediate loss of blood, pretty smart purging, and an abstemious diet. By thus anticipating the attack, I feel assured I have, in a number of instances, prevented this terrible disease.

1254. Some are attacked by a severe pain in the stomach, which Dr. Denman considers as more fatal than when the head is the seat of pain: of this I can say nothing from my own experience. I may remark, that the longer the premonition, the milder the attack appears to be. In the most suddenly fatal case I ever saw, the patient suddenly cried out, "My head, my head!" convulsions instantly ensued, of which she died in a few hours.—See Case IV.

1255. Pregnant women may be attacked with convulsions from causes not connected with gestation, or at least with labour—as the attack is not accompanied with any signs of it.

* We do not pretend by this term to insist on its character being the same as in true epilepsy—the term is only adopted, from the want of one more strictly, perhaps, appropriate.

These, if my observations be correct, are more unmanageable and fatal, than when pregnancy may be the remote cause. When pregnancy is instrumental in the production of convulsions, it is almost always at that period, when the uterine fibres are at their greatest stretch; where the os uteri is disposed to dilate; or where they suffer from some peculiar irritation, over which we have no control; or some inconvenience from the contents of the uterus, which has the same effect; and such convulsions are almost always of the epileptic species.

1256. These convulsions, so far as my observations have extended, are never preceded by an aura, as in epilepsy, properly so called. But after the patient has suffered for a longer or shorter period the symptoms just named, (1253,) she is seized with quickly repeated spasms—the face and eyes are twitched in all possible directions, with incredible quickness—the arms, legs, nay, the whole body, is violently agitated—one side is sometimes more affected than the other; the face becomes flushed, livid, black; the tongue is strongly thrust forward between the teeth, by which it is almost always severely wounded. Respiration at first is much hurried, and eventually becomes almost suspended; the carotids beat violently; the jugulars are much distended; a peculiar sibilating noise is made by the mouth, not unlike what is termed "a cat spitting;" froth issues from the mouth, tinged with blood from the wounded tongue. The pulse in the beginning is full, frequent, and tense; but quickly becomes rapid, small, and eventually almost imperceptible;* the urine and feces are sometimes discharged involuntarily; a cold clammy sweat bedews the whole body, and the fit begins now to decline.

1257. The convulsive motions gradually subside—they never cease suddenly and at once—their force and frequency abate; the pulse becomes more distinct and less frequent; the breathing

* I do not remember to have witnessed the condition of the system mentioned by Dr. Lyman; "œdema, and a remarkable slowness of pulse, as the precursors of convulsions," p. 347. I have often remarked the bloated face after the attack, but never an œdematous condition of the system previously to it. Not that this condition of the system, especially of the lower extremities, is uncommon, but that I have never found those who were subject to it, more liable to the attack of convulsions than those in whose system this condition did not obtain. Indeed, it would seem that they should be less obnoxious to it, as this class of females are rarely so plethoric as others, as effusion in the cellular tissue seems to relieve this over-fulness.

is less hurried, and less oppressive; the face loses part of its lividity; the muscles are agitated but at intervals, and their action resembles the commotion excited by passing a brisk electric shock through them, and eventually they sink into repose. The patient, however, remains for the most part insensible or comatose, with stertorous breathing or loud snoring; she cannot be roused by any exertion for some time, and if she recover for a moment her scattered senses, she is without the slightest recollection of what has passed. This truce is almost always of short duration; convulsion follows convulsion, without our being able to determine the period or cause of their return.

1258. When convulsions attack a woman absolutely in labour, or when this is about to take place, we may observe a pretty regular occurrence of the fits with the probable return of the pains—for though the patient be insensible to external occurrences, she appears to manifest by her moans, and the suspension of respiration, her sensibility to uterine contraction. This appears to me to be so manifest and decided, that I think I could tell what is going on at the mouth of the uterus, without an examination per vaginam.

1259. The face becomes very much swoln, especially the lips and eyelids; indeed, the whole body seems to partake in a greater or less degree of this intumescence, but in no part so conspicuously as the face. So completely is the countenance changed, or rather disfigured, that oftentimes it could not be recognised by the dearest or most intimate friend; nor does this swelling immediately subside with the convulsions which caused it; it frequently remains many days after they have ceased. Dimness of sight, nay, blindness for weeks, are not unusual consequences of this disease.

1260. In the apoplectic species we have nearly all the premonitory symptoms enumerated above, (1253) but of much shorter duration.* It may, like the epileptic, attack at any period of

* In a case of this species, which fell under my notice some time since, I thought it was not accompanied by either as much frothing at the mouth, or with as much sibilation, as in the epileptic. Mrs. ——, aged seventeen, pregnant with her first child, complained, on the 20th of July, 1824, of slight pains resembling labour; and also a general diffused pain, but severest in her limbs; so much so, in these parts, as to render her almost incapable of moving them: some fever, though slight. Dr. Shaw, under whose care she was, ordered her to be bled and purged. 29th, 3 o'clock, A. M., was attacked with labour pains; at first they were slight; but had much increased by the time the doctor was called. Upon examination, the os uteri was found a little opened; and at 8 o'clock A. M.

gestation, but does not always necessarily produce, or be accompanied by labour. From this, it would appear it may be brought on by causes independent of pregnancy, though this process may with propriety be regarded as an exciting cause; for it sometimes takes place when this process is at its height, and labour is no otherwise accessary to this end, than increasing by its efforts the determination of blood to the head. This species may perhaps with much propriety be considered only an exalted degree of the epileptic—in this, the epileptic, there is perhaps only engorgement; in the other, there is almost constantly effusion.

1261. In the hysterical species, we have not the same train or continuance of the premonitory symptoms. If headach attend, it is neither so severe nor so permanent; there is a ringing in the ears, globus hystericus, and palpitation of the heart. The face is much less convulsed—less vacillation of the eyes, while the larger muscles of the body are much more violently agitated; the patient, at times, is very obstreperous; and the muscles on the posterior part of the body are almost always violently contracted; so much so that the body will sometimes describe an arch backward. I have considered this last circumstance, as strongly

was attacked with strong convulsions, which were repeated about every twenty minutes. She was bled about twenty ounces; convulsions continued to recur. At 10 o'clock the same morning, the os uteri was pretty well dilated; and from a belief that convulsions were at least maintained by uterine distention and irritation, Dr. Shaw ruptured the membranes, with a hope of tranquillizing them.

At this time, I was called in. I found the patient totally insensible to any external impressions; nor had she discovered any sensibility after the second fit; breathing with considerable difficulty, and snoring pretty loud. The pulse was full, frequent, and hard, and the skin hot. Upon examining per vaginam, the head of the child was found at the lower strait, presenting with the posterior fontanelle behind the left foramen ovale, and entirely within the uterus—up to this time, about thirty-five ounces of blood were drawn. She was attacked with a fit soon after examination. There was something remarkable in the character of her convulsions—her eyes were but little agitated; the pupils much contracted; her face was but little suffused; there was less frothing at the mouth, and less sibilation than is usual.

I applied the forceps, and delivered her in a few minutes without the slightest difficulty. She remained after this for two hours without a fit; at the expiration of this time, they recurred about every half hour, until nine o'clock, P. M., when they ceased, but without any amendment in the condition of the patient—she appeared completely apoplectic. She continued much in this situation until six o'clock in the evening of the 31st, at which time she died. Leave could not be obtained to inspect the body. She did not complain of headach until the 29th, and this but a short time before she became convulsed. She lost, altogether, eighty-two ounces of blood; was freely purged, and once cupped.

marking this species of convulsion. The face is much less flushed, than either of the two other species; but never pale, agreeably to my observations, as some have remarked.*

1262. There is no frothing at the mouth; and the peculiar sibilating noise which so strongly characterizes the first and perhaps the second species, is entirely wanting in this—the patient, after the fit, can, for the most part, be roused to attention, or will frequently become coherent, so soon as she recovers from the fatigue or exhaustion occasioned by the violence of her struggles, and, though she may lay apparently stupid, she will nevertheless sometimes talk, or indistinctly mutter. After the convulsion has passed over, she will often open her eyes, and vacantly look about; and then, as if suddenly seized by a sense of shame, will sink lower in the bed and attempt to hide her head under the clothes. The pulse is much less disturbed, nor does it ever acquire that extreme velocity and tenuity it does in the other two species, for respiration is never so much in danger of being suspended.†

1263. This species attacks women of delicate and nervous habits; the recovery from it is always more rapid, and never, so far as I have observed, leaves any imperfection of vision.

1264. As nothing is so satisfactory, as regards the application of remedies for any disease, as the detail of cases, in which their routine is exhibited, I shall make no apology for inserting the following from my "Essay on Puerperal Convulsions." See "Essays upon various Subjects connected with Midwifery."

Case First.

Mrs. ——, a delicate small woman, twenty-three years of age, pregnant with her first child, was attacked, on the 16th of No-

* Dr. Lyman says, "it is particularly important that we should know how to distinguish puerperal convulsions from such as are purely hysterical," p. 351. In this I fully agree; and I should have felt grateful, had he added to our knowledge in diagnosis, by observations of his own. He has, however, laid down no marks by which we can distinguish one species from the other.

† Doctor Lyman says, "every variety of the disease is to be regarded as dangerous; for though a patient should appear but slightly injured by the first attack, a subsequent one may prove suddenly fatal," p. 350, loc. cit. I have never seen death follow the hysterical species; though the convulsions may have been very violent. Nay, females who are subject to this affection, are sometimes occasionally affected with convulsions during the whole period of utero-gestation, and this without disturbing its economy—the same may be said of constitutional epilepsy.

vember, 1809, at 8 o'clock, A. M., with epileptic convulsions. I saw her in an hour after the attack; previously to my seeing her, she had had three fits, and a fourth was coming on just as I entered the door. Three or four days previously to the attack, she complained of a violent jaw or toothach, which was looked upon as rheumatic, and no attention was paid to it. On the 15th, that is, the day before her illness, she was seized with an extremely acute headach; and, during the night, and just before the onset of the fits, she was violently sick at stomach, and vomited a large quantity of thick glairy mucus; immediately after this she said she could not see, and was in a few minutes more seized with convulsions. She laboured under these violent and terrific symptoms in an extreme degree. I instantly bled her from a large orifice in the arm ℥xxxv. by measure; this, as I have just said, was at 9 o'clock, A. M. Eleven o'clock, had two fits during my absence, and was now in the third—bled ℥xii. Ordered a strong infusion of senna as an enema—os tincæ a little opened, but rigid. One o'clock, P. M., had two fits since last visit—injection operated—pulse still active—face flushed—very restless and uneasy, arising, as I believe, from the pains in the uterus—os tincæ rather more dilated—to be bled by cups ℥x. Four o'clock, P. M., one fit; cups drew well; senna operated again two or three times; very comatose—ordered cold applications to the head by means of a large bladder partly filled with water and some ice—blisters to the legs. Seven o'clock, P. M., no fit since last visit—pulse very active—very restless, constantly making efforts to get out of bed*—os tincæ not much more dilated; took ℥x. blood; senna continued to operate. Ten o'clock, P. M., no fit since last visit; pulse still too active; took ℥x. more of blood; cold applications. Seventeenth, Mr. Purnell, now Dr. Purnell, one of my pupils, staid all night with the patient. He said she had one fit, after which he took ℥x. of blood; senna continued to operate. At ten o'clock, A. M., I saw her; stupor much less; recognised her friends, and asked some questions; she did not see well, a slight squinting was observable. Seven o'clock, P. M., better, pulse less active; but had three stools since the morning visit. Eighteenth, Mr. de la Motha, now Dr. de la Motha, another of my pupils, staid with the patient last night. She passed a good night, was tranquil and rational; no return of fits during the night; two stools. Saw her at 10 o'clock, A. M.:

* I have considered this as a pretty certain sign of labour going on.

skin dry and hot, face a little swelled, but perfectly collected. Eight o'clock, P. M., face more swollen, and a little flushed; much headach, pulse very active; great thirst; took ℥x. of blood, much relieved by it; pulse softened, and diminished in frequency; cold applications continued. Nineteenth, passed a good night, free from fever and pain; no return of convulsions; bowels rather tardy; ordered senna tea. Continued much in this condition until 28th, twelve days from the first attack; this morning was seized with brisk labour-pains, and was soon delivered of a dead child. From the degree of putridity, it is presumable that the child died early in or before the attack.

On this case it may be proper to remark, 1st. That the child had not been felt to move for several days before the patient was taken ill—but this is by no means a certain proof of its death. 2d. Signs of labour were manifested on the first day of the illness, but were evidently suspended, or at least not progressive, after the second. I occasionally examined for several days, but found the os tincæ so rigid, as to preclude the idea of manual assistance; it was therefore not attempted. 3d. Had manual aid been resorted to, I have no hesitation in believing it would have been extremely injurious. 4th. That the convulsions were controlled ten days before delivery took place, although, from the state of the uterus, it was evident it would sooner or later take place. 5th. That the attack commenced between the seventh and eighth months of pregnancy. The lady's next pregnancy was not attended by this untoward accident; strict attention was paid to her during the whole period of gestation. She was kept on a milk and vegetable diet—her bowels were kept open. She was occasionally bled, especially when she complained of headach—she took, for several months, three or four doses daily of the tincture of foxglove, with, I think, evident advantage; and was at the proper time happily delivered of a fine child. In her third pregnancy she attended much less to herself, and was not under medical restraint, in consequence of which she was again attacked by convulsions, and was held very much as above related, with the exception that labour was much more rapid. Her fourth pregnancy was again fortunate, as she again submitted to medical direction. Her fifth pregnancy I have understood was again unfortunate, and attended with convulsions like two of the former—I did not see her in this last pregnancy, having been absent in the country when it happened.

Case Second.

Mrs. ——, aged twenty-six years, pregnant of her first child —a large plethoric robust woman, was, on the 9th of September, 1811, at about five o'clock, A. M., taken with labour-pains, and sent for her midwife; before the midwife arrived she was seized with terrible convulsions, and I was immediately sent for—the fits were frequently repeated, and were from their extreme violence very threatening—her face was immediately swelled—her eyes fairly protruded from their sockets—her tongue terribly wounded, &c. I instantly bled her from the jugular vein more than three pints—examined her, and found labour approaching —ordered a brisk injection—saw her two hours after—had had several severe fits—pulse extremely active—labour advancing—bled her twenty ounces—injection repeated—a stream of cold water was poured on her head during the interval of the fits—eleven o'clock, A. M., fits not so severe, but pretty frequent—pulse still very active—took a quart of blood—apparently much relieved—lay quieter—one o'clock, P. M., had had two or three fits—very restless—moaned every few minutes, desirous of getting from the bed—bled her ℥xii.—examined and found the head low in the pelvis, and delivered with the forceps—she had two or three fits after delivery; and remained insensible to every thing for forty-eight hours. She now began to show some signs of returning sensibility—was bled twice in the interval—cold was applied to the head, and legs blistered—she was purged freely by senna tea. After this, she gradually recovered her senses. She was left completely blind for two weeks; she then began to see imperfectly, but was six weeks before she could distinctly discern objects. It may not be amiss to observe, the child was living.

This case is remarkable, on account of the severity of the disease, and the large quantity of blood that was drawn in the short period of a few hours. She lost in the first six or seven hours of her illness, one hundred and twenty ounces of blood, and about one hundred and forty altogether: a quantity that might at first sight startle the timid or inexperienced practitioner; but when he reflects that here was a patient labouring under one of the most ferocious complaints in the whole catalogue of human diseases; the brain threatened with immediate destruction; the patient of prodigiously full habit; one who not only neglected the kindly warning of headach, giddiness, and occasionally loss of

vision, by not having recourse to bleeding—but, contrary to the advice of the midwife, fed freely, and remained long costive—what then could avert the threatening consequences of this disease, but the most prompt and the most subduing remedies? Had not the bleeding been carried to the extent it was, I really believe it would have been unavailing. Even as it was, it did not prevent temporary blindness. Her second pregnancy was not attended with any untoward circumstance.

Case Third.

Mrs. ——, Nov. 10th, 1797—pregnant with her second child, and in the eighth month, was seized while at the ironing-table with vertigo.* She fell, and was immediately attacked with convulsions. I was living near; and was instantly sent for—I found her labouring under the general symptoms of this disease—I bled her from both arms at once, and took from each arm nearly, if not quite, a quart of blood. She appeared for a short time much relieved; that is, the convulsions were abated—I examined her, but found no change in the os tincæ. An injection was ordered, which operated well—about an hour after the bleeding, her pulse rose very much; her breathing was more laborious and stertorous, and some convulsive twitchings played over the whole body. She was entirely insensible to all external impressions—the pupils of the eye were much dilated; fearing a violent repetition of the convulsions, I again tied up the arms, and took about twenty-five ounces more of blood—this seemed again to moderate the symptoms—no change in the os tincæ. Four o'clock, P. M., three hours after the attack, the convulsions were renewed with considerable violence—she was let blood to the amount of twenty ounces—cold water was poured on the head—she was again more tranquil, but not less comatose, though the breathing was less loud; she had a copious black stool. Six o'clock, P. M., had had several fits, but not as violent as at first—pulse still too active; took eighteen or twenty ounces of blood from the arm—as the pulse was now considerably reduced, applied a pair of blisters to the legs, and sinapisms to the feet. Ten o'clock, no convulsions since last visit, breathing freer, but loud—swallowed a little water with some difficulty—passed no water since the attack; introduced the catheter, and drew off a large quantity—had two

* She had complained all the morning of intense headach, and several times said she could not see—she was advised to leave off work, but would not.

stools—made an effort to vomit. Eleventh, six o'clock, A. M., was called to her suddenly, as her breathing was becoming more laborious and loud, and face more flushed, with some convulsive agitations; pulse rather too active; had ten ounces of blood by cups, and a large blister placed between the shoulders. From this time there was no return of convulsions. She gradually recovered her recollection, but remained until some time after her delivery, (which took place at the regular time, and with a living child, with imperfect vision, especially in one eye. She was, for many years after this, subject to violent headachs, which were relieved constantly by bleeding. She had several children after this attack, without convulsions.

Case Fourth.

Mrs. ——, October 1, 1803, had been in labour several hours; she had every appearance of being happily delivered of the fifth child, when, during a strong pain, she instantly cried out, "My head, my head!" and immediately fell into convulsions. She was under the care of another physician, to whose aid I was instantly called by his own desire—the convulsions were strong, and very frequently repeated—she was largely bled; on examination, the child was found to be far advanced, and was speedily delivered by the aid of the forceps—the convulsions, however, continued in spite of every exertion to relieve them, and she died in about three or four hours from the attack. Leave was obtained to open the body; the longitudinal sinus of the dura mater contained, (by estimate,) between two and three ounces of blood; the posterior left ventricle was filled with a bloody serum—the other ventricles appeared sound, as did the other parts of the brain—no other part was examined.

Case Fifth.

Mrs. ——, aged 24, pregnant for the first time, was taken in labour on the 10th March, 1797—her labour proceeded regularly, and the child's head was at the inferior strait, and every rational expectation was entertained of a speedy delivery, when she suddenly cried out with pain in her head, and declared she could see no one in the room; these symptoms had continued but a few minutes, when she was seized with convulsions—she was under the care of the late Dr. Shippen, who requested that I might be sent for, and desired I would bring my forceps with me. I found

the patient in a strong fit, with her face literally as black as a negro—it was agreed she should be bled extensively—this was done from the left jugular vein, to the amount of nearly two quarts; it had an immediate effect in tranquillizing her. I now examined her, and found the head low in the pelvis; I applied the forceps, and delivered her of a dead child. Upon examination, it was found there was another child; the uterus soon discovered a disposition to act; but fearing injury from delay, I immediately delivered by the feet; which were the presenting parts; the child was healthy and did well: the mother had no return of fits, and she rapidly recovered the use of her health, excepting that of her eyesight, which did not return, so as to discern objects, for several days; and her vision was very feeble for several weeks.

Case Sixth.

I was called on the 10th of July, 1811, to Mrs. ——, who was, at the moment of my arrival, and had been for a considerable time before, in a strong convulsive paroxysm. I found several men diligently employed in holding her, and opposing her motions; she was raised in the middle like an arch, while her feet and head nearly met. She was between seven and eight months pregnant, and subject to hysterical affections.—She was thrown into this by some altercation with one of her neighbours—cold water was dashed in her face, and she was bled to the amount of sixteen ounces. The spasms began to give way soon after, and in the course of about fifteen minutes ceased. She sighed very deeply, and struck her arms very forcibly against the bed, and in a few minutes more, inquired what all these men were doing with her. I gave her fifty drops of laudanum, and two tea-spoonfuls of the tincture of asafœtida in some sweetened water, and she had no return of the fit.—She went her full time without a repetition of them, and was safely delivered of a healthy child.

I shall now subjoin two other cases, to show of how much consequence a proper distinction is, in the treatment of puerperal convulsions.

Case Seventh.

I was called on the 16th of April, 1810, to Mrs.——, said to be in strong convulsions. I was from home when the messen-

ger arrived, but went as soon as it was in my power. When I went into the sick chamber, I found Dr. —— with the patient. He told me "Mrs. —— had been attacked about two hours before with convulsions, and was in the ninth month of pregnancy —that, previously to the attack of the fits, she had complained of violent pain in the forehead, which she told her husband she could cover with her finger. She had this pain several days, but it was much more intense this morning, and was attended with a sensation, as if a piece of black gauze was before her face. She was stooping for some time over a trunk, in which she was arranging some articles, when she was seized, and fell on the floor in strong convulsions."

She was now lying senseless and without motion on the bed; she breathed very heavily, and snored loudly—her face much swoln and of a purple hue—the pulse frequent and small, and the extremities cold. I inquired what had been done, and was informed by Dr. —— he had given her, twice, sixty drops of laudanum at a time, and that since the last dose she had had no fit, and was, in his opinion, very much better, requiring nothing but sleep to restore her.—I told him very plainly, that I thought he had mistaken the patient's case, and had, in my opinion, sealed her fate by the use of the laudanum.—He appeared alarmed, but not altogether convinced.—We did every thing that we thought might be useful; but all exertion was unavailing, and the patient died in about three hours.—I could not procure leave to open the body.

Case Eighth.

About three months after the above event had taken place, viz. on the 20th of July, 1810, the same gentleman was called to Mrs. ——, labouring under convulsions. I was sent for at his request. Before I arrived, he had bled the patient very freely, (40 ounces,) by which she was considerably relieved—she was near her full time of gestation. From her peculiar motions and breathing, I suspected labour had commenced—she was examined, and the os uteri was dilated to about the size of a dollar. It was, however, pretty rigid. The convulsions returned with considerable force; the patient was again bled about thirty ounces; a stimulating injection was thrown up the rectum, which operated freely; the mouth of the uterus was now well dilated; I turned, and delivered a living child. Mrs. —— had

one fit after delivery, but it was not severe. She recovered her senses and feelings on the second day after delivery, and no other inconvenience was experienced, except some dimness of sight, and slight headach. Several days before the attack of convulsions, she had complained of the headach, and that particular sensation of a nail being driven into the head, and also an occasional loss of sight.

The two cases just related form a happy contrast in the mode of treatment; the first case proving so unfortunate, made a strong impression on the mind of Dr. ——, who very properly profited by it in the second case. He candidly confessed they were as similar as any two cases of disease could be, and declared himself much shocked at the reflections which the unfortunate case gave rise to.

In every case of convulsions, it is but too common for by-standers to oppose, by strength, the contractions of the agitated muscles. This practice cannot be too severely reprehended; for it is both injurious and unnecessary; it subjects the patient to severe muscular pains, which last for very many days after the fits subside. All that should be done in such cases is, to prevent the patient doing herself mischief, or to prevent her from throwing herself from the bed; and as a very moderate exertion is sufficient for this purpose, therefore, violence should never be employed.*

CHAPTER XXXIV.

OF THE INVERSION OF THE UTERUS.

1265. This untoward, and too fatal accident, is, perhaps, more frequent than is commonly supposed. Instances of sudden death

* The following interesting statement of the result of forty-three cases of puerperal convulsions from Dr. F. H. Ramsbotham's Lectures on Midwifery, as recorded in the 14th Vol. of the London Medical Gazette.

"Of forty-three women whom I have seen under puerperal convulsions, in ten cases fits attacked the patient, before labour pains came on; in twenty-four, during labour itself, and in nine after the birth was perfected. Thirty of these women were delivered naturally; five by the forceps; three by craniotomy; four by turning; and one by the blunt-hook. Thirty-six recovered perfectly; seven died; one was a twin case. Of the children, twenty-one were born alive, twenty-three dead. About two cases out of three were first pregnancies. Of those that died

after delivery often remain unaccounted for;* and there is every reason to believe, that this displacement of the uterus is sometimes the cause. Examinations of women who have died during labour, or soon after delivery, are not so frequent as their importance seems to demand. This indifference to examinations after death, arises, 1st, from an inadequate estimate of their value, even by medical practitioners; 2dly, from the aversion most people feel to have their friends' remains disturbed; 3dly, to the disingenuous conduct of the attending physician himself, who may not wish the cause of death to be ascertained, lest it should do injury to his character, either from his not having known or suspected the true one, or by exposing some lesion for which he fears the world would hold him accountable, though he had no agency, either directly or indirectly, in producing the accident by which death has been produced. Hence, as I have just observed, this complaint is, most probably, every now and then concealed; and therefore, the frequency of the inversion of the uterus in producing death, cannot be exactly estimated.

1266. Inversions of the uterus may be either complete, or incomplete—by a complete inversion, I mean the passing of the fundus and body of the uterus through the os externum, or being turned entirely inside out, to the very mouth of this organ; when this takes place the mouth of the uterus is looking upwards and is within the cavity of the abdomen. But it is not necessary to the complete inversion, that the body and fundus escape through the

in one instance I found a large quantity of blood, extravasated under the arachnoid membrane, which had escaped from a ruptured vessel in the pia mater, situated between the convolutions of the posterior lobe of the right hemisphere of the brain.

From so large a proportion of recoveries, we are disposed to believe that many of these cases must have been of the hysterical species; as in this city, not more than one, perhaps, in three recovers from the first two species.

* Levret in his chapter, "sur la cause la plus ordinaire, de la mort subite, &c. tres peu de temps aprés l'accouchement," attributes the greater part of such deaths to the want of contractile power in the uterus, thereby giving rise to fatal hemorrhages. He does not appear to have been aware, that the partial inversion may be a cause of death, or in some instances contribute to it, as he passes without notice this circumstance in the case he quotes from Mauriceau; who says, on opening the body, "nous trouvames le fond de la matrice un peu dèprimè encedans, comme est le cul d'une fiolle de verre, au lieu d'avoir une figure rond, comme on le voit ordinairement." Obs. 230. While Ant. Petit thought the "inversion of the uterus to be impossible;" and declared that those authors who mention this condition of the uterus, had mistaken a polypus attended by a prolapsus of the vagina for it.

os externum; as this condition may happen, and yet the uterus be concealed within the vagina.

1267. Mr. Burns says, when the inversion is complete, the fundus is "protruded out of the vagina." This is not essential to the definition; since, I have known the uterine tumour to pass through the os externum, without entirely inverting the neck to the mouth; and again, I have known the inversion to be complete, and the fundus not escape from the vagina.

1268. The incomplete, is where neither the body nor fundus have entirely escaped through the os uteri, and may be in different degrees; 1st, the simple depression, or where the fundus falls down to the mouth of the uterus; but is prevented from passing through it, by the latter being contracted; or the force may have been insufficient for this purpose; 2dly, where it has passed, perhaps half its length through the os uteri; 3dly, where it is completely inverted, with the exception of a portion of the body and neck. In the two latter conditions, the body and fundus may be compressed or strangulated, by the neck of the uterus contracting forcibly upon the protruded part; or it may be free from this restraint; each of these presents different indications.

1269. Remote cause.—The remote cause of this accident is, the want of power or disposition, in the body and neck of the uterus, to contract. This may be occasioned by an over-distention of this organ, from an excess of liquor amnii; from the unusual size of the fœtus; from a compound pregnancy; from hemorrhagy; from passions or emotions of the mind; from exhaustion, in consequence of previous disease; from long-continued uterine efforts to effect delivery, &c.

1270. Proximate cause—For the uterus to become completely inverted, several circumstances must combine; first, the fundus must most probably contract, while the body and neck must be flaccid; secondly, a force or weight must be applied to the fundus, which is capable of making it descend through the os internum: this force may be a power applied to the cord; and the weight may be the placenta itself, when it is ingrafted immediately upon the fundus, or the pressure of some of the abdominal viscera, &c. But let it be remembered that, in the incomplete, the mouth of the uterus looks downwards, or into the vagina, and is *always within the vaginal portion of the pelvis, though completely filled by the descending portion of the body of the uterus.* See par. 1266. See Plates XIV., XV., XVI., XVII.

1271. Symptoms.—When this accident takes place, the woman

almost instantly complains of a severe and distressing pain about the region of the uterus; an effort to force or bear down; nausea, and sometimes vomiting; great faintness, with more or less hemorrhage; cold clammy sweats; pulse small, frequent, or extinct. A variety of nervous symptoms may also occur of a most distressing kind, arising, most probably, from the new situation the abdominal viscera are forced to take, when deprived of the support of the uterus.

1272. If we examine per vaginam, it will be found that the vagina is occupied by a firm resisting tumour, covered by the placenta, or otherwise, as the period may be at which this accident occurs; or the fundus and body may be pushed through the os externum, either bare or covered by the placenta. This casualty may take place immediately after the birth of the child; or it may not occur for hours, or even days, after this event.* If the hand be now placed upon the abdomen, we shall fail to find the uterus.

1273. Incomplete.—The incomplete must have the same general causes as regards the effect upon the fundus and body—that is, the fundus cannot be supported by the body, from its loss of power, by the operation of either of the same remote causes, (1270;) but is prevented from entirely passing through the neck, by the latter contracting, and arresting it within, or only permitting it to pass in part. The same general train of symptoms occurs, but this condition is almost always attended with a greater discharge of blood, than when the inversion is complete.† If an examination be carefully made per vaginam, the fundus of the

* A very remarkable case of "complete inversion" taking place a long time subsequently to labour, is given with great clearness and accuracy, by Mr. Watkinson, in Med. and Phys. Jour. Vol. VII. p. 433. This case was of long duration, and eventually and suddenly fatal, after it had been amputated by cutting through the prolapsed and inverted vagina. Mr. W. assigns, as the cause of death, the relaxed state of the os uteri; and perhaps of the uterus itself, occasioned by the long-protracted hemorrhage, and the formation of coagula; in expelling the latter, the uterus was perhaps inverted.

† It is a remarkable fact, that less blood is lost when the uterus is completely than when it is partially inverted. This is not, perhaps, of difficult explanation; since, when the inversion is complete, the uterus contracts to a certain extent; and by this contraction, the now internal surface of this organ is made to impinge upon the vessels which carry blood to it, and thus interrupts or cuts off fresh supplies of this fluid. It may also be proper to observe, that hemorrhage is never so suddenly alarming, in cases of inversion, as it is when it arises from the uterus being in a state of atony, and the placenta detached from it.

uterus may be detected in one of the situations mentioned for this species or variety of inversion, (1268.)

1274. The incomplete inversion, we have observed, has various degrees of derangement; namely, from the simple depression, (1268) to the entire escape of the inverted body and fundus through the os uteri of the uterus; but they are not equally distressing or dangerous, though neither condition is free from risk. Thus, the simple depression is not necessarily as fatal as when the fundus alone has passed through the os uteri; and the latter not so full of danger, as when the inversion more nearly approaches to being complete. Perhaps mere depression, unaccompanied by hemorrhage, might not be absolutely fatal; but as there can be no possible security against this condition, longer than the placenta preserves its entire connexion with the uterus, it must be regarded as a case of possible, nay, of probable danger; and consequently, should never be trusted after it is detected.

1275. The symptoms, however, in each of these degrees of inversion, differ only in intensity; for all are marked by a peculiarity of suffering, the force of which will very much depend upon the extent of the displacement of the fundus and body of the uterus, and the constricting force of the os uteri through which they may have passed. For instance; the simple depression will be marked by less suffering, than when the fundus has passed the mouth of the uterus; and the alarming symptoms in the last case, will be in proportion to the contraction of the os uteri; if this be feeble, the risk, and sufferings, will be comparatively moderate; but when the stricture is very severe they are not only of the most distressing kind, but highly dangerous. Yet each of these conditions may accidentally be equally dangerous, though not equally alarming in the intensity of their symptoms. Thus, the simple depression, may be as fatal as a more extensive displacement, in consequence of the profuseness of the flooding which may attend it, though the sufferings of the patient may be much less severe than when the inversion is more extensive. (See Case I.)

1276. The mechanism of inversion is sufficiently simple; it seems to require but a state of atony of the uterus to produce it, with, perhaps, more or less pressure upon the fundus of this organ; or, possibly, the mere contraction of the fundus, and the implantation of the placenta on this part. When this derangement takes place before the delivery of the after-birth, we have much reason to suspect that its weight, as well as its location,

materially contribute to its production—this location of the placenta, indeed, seems to be almost a sine qua non to inversion; for we either find the placenta discharged from the vagina, or else attached to the fundus of this organ: now, had the placenta been attached to any portion of the body of the uterus, that part must have contracted that it might be thrown off; and that contraction of the body of the uterus, most probably, would have given such support to the fundus as to have prevented its falling down.

1277. It is almost universally believed, that an undue force applied to the cord for the delivery of the placenta, is the principal cause of this accident; but in this I differ from such as have adopted this opinion; and for the following reasons: first, because the accident has occurred after the delivery of the placenta; secondly, because it has taken place, when no such force has been applied.* But the caution, not to apply much force to the cord to deliver the placenta, is founded upon just and important principles; since, did the disposition to inversion exist, and this mass be attached to the fundus, it would be almost certain to produce it; whereas, perhaps, without such force, the woman might escape from the danger.

1278. Mr. Burns, after enumerating several causes of inversion, such as pulling of the cord; the too sudden delivery of the child when the cord is too short, &c., says, "from the same cause, or sometimes, perhaps, from sudden pressure of part of the intestines on the fundus uteri, occasioned by strong contraction of the abdominal muscles, a part of the fundus becomes depressed like a cup, and encroaches on the uterine cavity. This generally rectifies itself if let alone." I would inquire, for the sake of information, how this dipping of the fundus is known to exist? and how it is ascertained, that it "generally rectifies itself if let alone?"

1279. I can readily comprehend, that an unusually short cord, with the sudden expulsion of the child, may produce inversion, even when there is no disposition to atony in the uterus; as the fundus may be dragged down at the instant relaxation is about to take place; but I confess myself entirely at a loss to comprehend

* In evidence of this, Mr. Welsh says, in his account of a case of inversion, that, "on dividing the funis to remove the child, I was extremely surprised to find the uterus completely inverted, and lying without the labia, on the thigh."—*Lond. Med. and Phys. Journal Vol. V.* p. 451.

what Dr. Merriman* may mean by a short cord, when its length permitted a child, by a sudden effort of the uterus, to be "thrown to the extremity of the bed," though this cord was "naturally short, besides being twice passed round the child's neck," and the placenta retained, "though low in the pelvis." Quere, if this be a short cord, what constitutes a long one?

1280. The indications in inversion are simply these; first, to restore the prolapsed fundus when practicable; secondly, to prevent a reinversion after restoration; and thirdly, if the fundus cannot be restored, to prevent death by taking off the constriction occasioned by the contraction of the mouth of the uterus.

1281. When the fundus is prolapsed to the mouth of the uterus, but contained within it, should the mouth of the uterus be sufficiently yielding, the hand must be gradually passed through it, and the fundus carried upward until restored—if the placenta has been thrown off, we need but retain the hand within the uterine cavity, until we have sufficient evidence of its disposition to contract, and to maintain that contraction. If the placenta has not been thrown off, it will be found either loose or adherent—if loose, it must be withdrawn with the hand, after we are satisfied that we may trust the uterus to itself. If adherent, we must gently separate it after the uterus shows signs of returning power, and when separated, it must be taken from the uterus, when the hand is retracted. It is more than possible that the mouth of the uterus may contract so firmly in this species of inversion, as to prevent the introduction of the hand to restore it. In this case, shall we act upon the hope that this case "generally rectifies itself if let alone," or shall we attempt the restoration of the fundus by some safe mechanical contrivance? Might not a stiff piece of whalebone, or tough wood, armed by a piece of rag, be employed with a prospect of success? for we must ever deprecate *violence* to the mouth of the uterus.

1282. Should the fundus have escaped in part through the mouth of the uterus, it should be as quickly as possible returned, by pressing the most depending and central portion of the tumour gently, steadily, and perseveringly in the direction of the axis of the os uteri until it retire; then if it do not return to its proper situation by its own resiliency, we must pursue it with the hand

* Denman's Midwifery, Francis's ed. p. 514.

through the mouth of the uterus, nor should it be left unsupported until placed in situ. And the hand must be kept in the uterus, until, by the contraction of the uterus, there is assurance it may be withdrawn with safety.

1283. We now and then meet with cases, in which the relaters would seem to persuade us that some special providence had interfered to save their patients, since they record departures in the animal economy that can be accounted for upon no other principle. Now, nothing is more to be dreaded than the atony of the uterus after delivery: we have already declared it to be (1270) one of the remote causes of the "inversion of the uterus;" and every body acknowledges it to be the reason why hemorrhage takes place after delivery, when the placenta is separated, either partially or altogether. Yet we find mention of a case of inversion by Dr. Loffler, in which the fundus of the uterus could not be retained after reposition, owing to the loss of the tonic power of this organ, but again and again descended through the os uteri.—"The fundus uteri having receded through the orifice of the uterus, I pursued it with my hand, which I kept in the uterus, waiting for the contraction of this organ. But after I had continued in this position about half an hour without perceiving any contraction, I was obliged to withdraw my hand, when the fundus immediately descended, but was prevented from passing through the orifice." A variety of things were done for twelve hours to promote the contraction of the uterus, as stimulating injections into its cavity, frictions, &c., but all to no purpose; for the uterus remained in the same flaccid state, and he was at last under the necessity of propping up the fundus by a tube made of horn. This was effected without much difficulty; the lochia passed off properly, &c., and the woman recovered. Now, this case is altogether a miracle!—a woman had an uncontracted uterus; a separated placenta; and yet there was no hemorrhage!!!—at least no mention is made of any, though the uterus remained days uncontracted.*

1284. If the placenta offer itself before the prolapsed fundus, we may, if detached, deliver it immediately; but if it be adherent, and the mouth of the uterus does not offer too much resistance, it must be carried up with the fundus, and separated as before directed, (1281.) Should we, however, find much opposition to

* Med. and Phys. Journ. Vol. II. p. 207.

reduction, and this evidently, in part, arising from the bulk of the mass to be restored, it will, perhaps,* be best to separate it carefully, and then carry up the fundus.

1285. Should the inversion be complete, it will for the most part be impossible to restore it,† especially if several hours should have elapsed after the accident. Dr. Denman says, "the impossibility of replacing it, if not done soon after the accident, has been proved in several instances, to which I have been called, so early as within four hours, and the difficulty will be increased at the expiration of a longer time. Whenever an opinion is asked, or assistance required in those cases which may not improperly be called chronic inversions, it is almost of course that the reposition should be attempted; but I have never succeeded in any one instance, though the trials were made with all the force I dare exert, and with whatever skill and ingenuity I possessed; and I remember the same complaint being made by the late doctors Hunter and Ford; so that a reposition of a uterus which has been long inverted may be concluded to be impossible. It seems as if the cervix of the uterus continued to act, or had soon acted in such a manner as to gird the inverted uterus so firmly, that it could not be moved." This account of the impracticability of restoring the fundus when the inversion is complete, is in strict conformity with my own experience.

1286. It is true, it is said, that the uterus has been reinstated after "complete inversion;" but of this we may justly entertain doubts; for the one recorded by Mr. White, purporting to be of this kind, was certainly not one of "complete inversion." In Mr. White's patient, we recognise nothing more than a partial one, as the symptoms declare. Mr. W. says he saw the patient about an hour after the accident, and "found the uterus of the size of a large new-born infant's head, *totally inverted.*" Yet he declares the woman "was in great pain, and had lost much blood;" neither of which circumstances attends complete inversion; for it seems to be agreed, that there is not much hemorrhage at this

* I say "perhaps," because I cannot speak more positively upon a subject on which my experience is so limited. The propriety of this practice I wish to leave to farther observation; for having met with but four cases of "inversion,"§ I think that number inadequate to establish the best mode of practice.

† I would not dare to say, it would be impossible to restore the uterus after its complete inversion; though I believe it, at this moment.

§ Since the above period I have seen several more cases of inversion. See note to par. 1301.

time, and I know that pain immediately ceases, when it becomes complete, as I shall state presently.

1287. This patient "was very faint, and no pulse could be felt in either arm:" a condition which constantly attends the partial inversion; especially when the mouth of the uterus contracts firmly upon the body, producing a strangulation of the uterus; which was precisely the situation of Mr. W's. patient; for he declares "the neck was a little contracted." Now, it must be obvious, upon a moment's reflection, that, if the inversion were complete, the mouth of the uterus cannot be felt; for this part now offers its opening to the cavity of the abdomen, and is not tangible by the finger. See case second, and Plate XVI.

1288. There is a condition of the partial inversion, where it is as certainly impossible to restore the fundus, as if the inversion were complete; and this is, where the fundus and a part of the body have passed the os uteri, and the latter contracts, "so as," as Dr. Denman expresses it, "to gird the inverted uterus firmly, so that it cannot be moved." When this happens, the stricture occasioned by the contracted mouth, is so firm and resisting, that a finger cannot be passed between its edge and the confined uterus—in this case, I believe it to be impossible to pass the fundus, as the constriction would not yield to any force we could use with safety.

1289. This variety of partial inversion, produces the most terrible and alarming symptoms imaginable; pain, faintness, vomiting, delirium, cold sweats, extinct pulse, convulsions, and, if not speedily relieved, death. Under such sufferings, when all hope of restoration is at an end, I have advised, with a view to terminate them, and to preserve life, that the fundus and body should be drawn still farther down, so as to complete the inversion. Should the placenta be attached, it must be carefully separated before we draw down the fundus.

1290. The propriety and safety of this plan, are, it must be confessed, predicated upon the happy result of a solitary case; but, from its entire and speedy success in this instance, it is rendered more than probable that it will be of equal advantage, if employed in others. "All reasoning upon the subject," is certainly in its favour; and experience, so far as a single case may be entitled such, is equally so. See note to par. 1301.

1291. Should the practitioner, however, be so fortunate as to meet with a case where the mouth does not confine the protruded part, he should attempt restoration, however large a portion

of the uterus may have passed through the os uteri, by gently, but firmly compressing it, so as to reduce its size; having first removed the placenta, if not previously done, and urging the prolapsed part upward in the axis of the os uteri. In such a case, perseverance may, I am willing to admit, do much, and it ought most certainly to be tried if there be the smallest chance of success.

1292. The chance, however, should be clearly ascertained, by carefully examining the condition of the constricting part—if it be soft and yielding, a hope may be indulged that the resistance may, by proper proceeding, be overcome. If this friendly condition obtain, there will be, beside this pliant disposition of the os uteri, an absence from all, or nearly all the terrible symptoms just enumerated, (1289;) but, if he cannot find the mouth of the uterus by a careful examination after the placenta is removed, and if there should be an absence of the train of appalling symptoms above named, he should desist at once from every attempt at reduction, as his efforts will not be attended by success; and the continuance of them will not only give his unhappy patient much unnecessary pain, but will hasten her death.

1293. The mode to be pursued, when it is necessary to complete the inversion, is simply to place the woman upon her back near the edge of the bed; and have her legs supported by proper assistants—the hand is to be introduced along the inferior part of the vagina, but sufficiently high to seize the uterus pretty firmly; it is then to be drawn gently and steadily downward and outward, until the inversion is completed; this will be known by a kind of jerk announcing the passing of the confined part through the stricture. Traction should now cease, and the part be carefully examined; if the inversion be complete, the mouth of the uterus will no longer be felt, and there will be an immediate cessation of pain, and other distressing sensations.

1294. The proposal just made, "to convert an incomplete inversion into a complete one," in cases in which it is deemed impossible to place the fundus in situ, is either an important improvement in the treatment of this complaint, or is a most mischievous direction: it, therefore, not only merits, but absolutely requires a dispassionate, and candid examination. In inquiring into the merits of this case, I shall lay aside every feeling of self-love that might reasonably be supposed I would cherish, as the author of an original, and, perhaps, a highly important suggestion; and I will, also, as far as either my experience, or my read-

ing shall enable me, give the subject a temperate, and liberal consideration.

1295. In this investigation, I will first inquire into the nature of the case, which is supposed to require this operation; secondly, determine the situation, and condition of the parts, after the inversion is complete; and, thirdly, investigate the cases which purport to be cases of complete inversion, and in which the uterus is said to have been restored to its natural situation.

1296. I. It has been always found, when the greater bulk of the uterus has passed the os uteri, that the most alarming symptoms immediately ensue; and if the parts be not speedily relieved from this unnatural situation, the case will almost constantly terminate in death. (See case first.) The terrible symptoms just spoken of, arise from that portion of the uterus, which is below the circle of the os uteri, becoming strangulated by the firm and obstinate contraction of the neck, by which it is now surrounded, to say nothing of the new situation of this organ—namely, its internal surface forced to become the external. Every body conversant with the anatomy of the uterus after parturition, will acknowledge, that the portion of the uterus which passes through the mouth in a case of inversion, is vastly greater than that portion which constitutes the neck; especially when the latter has a disposition to contract by virtue of its tonic power. Now, this contraction must take place before the threatening symptoms can show themselves; consequently, the part which is protruded must very much exceed in size that through which it has escaped. For the body and fundus of the uterus, even in the natural relation of these parts to each other, are much larger than the neck of this organ; and when they are newly freed of their contents, and are fully engorged with blood, those proportions are increased; and such is the disposition of the neck of the uterus to contract, that, in most instances, it is found to be small and resisting, very soon after delivery; while the body and fundus, though in the healthy exercise of their powers, remain for a long time comparatively large. It must, therefore, follow, that unless the bulk of the body and fundus can be reduced to the size of the constricting circle of the os uteri, or the constricting circle be enlarged to a dimension equal to that of the body and fundus, one cannot be made to pass through the other.

1297. II. The situation and condition of the parts, after *the inversion is complete*, is very different from what they were

before this had taken place. These changes consist, 1st. In the entire removal of the constriction, in consequence of the neck of the uterus itself becoming also inverted; and, consequently, every portion of the body and fundus being removed below or over its grasp. 2d. By the capacity of the os uteri being still more diminished; as it is no longer distended by a portion of the body of this organ; consequently, the body and fundus are increased in size, if not positively, certainly relatively, while the capacity of the mouth is diminished; as the latter naturally becomes smaller than the former. The uterus will now resemble a pear suspended by its stem; (see Plate XVII.) and the relative proportion between its extremities is pretty much in the same degree, as that which exists between the two extremities of a pear.

1298. The uterus in a state of complete inversion, is suspended by the upper portions of the vagina, and can be pushed a considerable distance upwards into the pelvis, if we press its fundus in that direction; or, by a contrary force, it may be dragged to some distance beyond the os externum; consequently, it is capable of considerable motion.

1299. Now, in order that the body and fundus may be restored after inversion, they must return through the contracted mouth of the neck of the uterus; and, with a view to explain the nature of the difficulty that must be encountered in the attempt to perform this operation, let us take an example from a suspended, pear-shaped, gum elastic bottle; and the material, by which it is suspended, capable of bearing but a limited degree of force. Let us imagine, however, in our example, that we wish either to produce its inversion, or to restore it, after it has been inverted. If we adopt the latter, (for it is more analogous, we must take for granted, that the neck, from some cause or other, had lost its power of resistance, and had permitted the fundus and body to pass through it; and that now, it is our design to restore them; but at a time when the neck has recovered its powers, and is now in a state of contraction, or resistance. I will ask any man of candour, if, under such circumstances, he would think it possible to restore the fundus and body; (if we may so term the two portions of the gum elastic bottle,) we are well persuaded that he will not, and for the following reasons: 1st. Because the neck of the uterus, or of the bottle, if we pursue the example, is now nearly, or quite at its minimum size, while the body and fundus

preserve a greater size than natural; and, consequently, are much larger than the neck.

1300. 2d. Because there is too great a disproportion between the size of the body to be passed, and the opening which is to permit it to do so, if the natural relation of the parts exist, which in this instance must be admitted.

1301. 3d. Because, though it might be possible to make the mouth of the uterus yield, by a sufficient force being directly applied to it, yet we cannot in this case take advantage of this probability; since our force can only be applied in one way, and that way an imperfect one; namely, by urging the fundus towards the constriction, and attempting to make it pass the contracted mouth of the uterus. But in this consists one of the difficulties of the operation; for, be the body and fundus of the uterus either firmly contracted, or comparatively flaccid, great difficulty would be experienced in pressing the centre of the fundus towards the axis of the mouth, if it be even practicable.*

1302. 4th. Because if the fundus be thus carried to the mouth of the uterus, it cannot be made to pass, from the excess of its bulk, and the resistance of the contracted mouth, unless a force be employed that shall overcome all opposition; and if this be applied, the vagina at its union with the neck of the uterus will yield sooner than the mouth of the uterus.

1303. 5th. Because Drs. Denman, Hunter, and Ford, have (1285,) all confessed they failed in every attempt they had made to restore the fundus in a complete inversion; and I will most candidly add, that the same failure has attended my exertions, after the best directed, and the most persevering endeavours, I could devise.

1304. 6th. Because no pressure, or force, however well-directed, however long continued, can diminish the fundus and body below the natural size of the mouth of the uterus, when this is in a state of contraction.

* In two cases of inversion, one complete and the other nearly so, I persevered in the attempt at reduction, nearly two hours. The plan I pursued, in both, and I believe it is the only one which promises success, was, after grasping the bulk of the protruded part firmly, but gently, for half an hour, with the intention of dispossessing it as much as possible of blood, and thereby reducing its bulk; I then placed the ball of my thumb to the centre of the fundus, and gently and steadily pressed it in the direction of the axis of the mouth. After continuing this pressure for a long time, I found my thumb buried in an indentation of about an inch in depth, which encouraged me to persevere a considerable time in the

1305. III. I shall now examine such cases as purport to be instances of reduction, after "complete inversion." From what I have already said upon this subject, it will be seen, that a very indistinct notion has been entertained of the complete "inversion of the uterus;" and if our definition be referred to, (1266) and admitted, as it certainly should be, I think it will be easily shown, that no one instance in which it is said re-inversion was effected, was a case of "complete inversion."*

1306. We have already given our reasons for not allowing Mr. White's case to have been one of "complete inversion of the uterus," (1286) and the same argument will apply to all such as purport to be of this kind, as far as I have had it in my power to examine them. Thus, we find a case stated in the "New England Journal," Vol. I. third series, p. 264, which is called a case of complete inversion, and in which reduction was effected. The relater says, "The attending physician pulled gently at the cord; immediately the placenta pushed forward, protruded at the external orifice, and was followed by the uterus, completely inverted. The placenta still adhering, he separated it with the fin-

same kind of force. At one time I thought my efforts were about to be crowned by success, as I believed I was making the fundus encroach upon the circle through which it must pass, before it could be reduced. But I was too soon convinced my hopes were delusive; for, upon an accurate examination of my proceedings, I found my supposed progress was altogether owing to the straining of the os uteri at its connexion with the vagina; and I was obliged to abandon an enterprise that at one moment I had flattered myself was about to be successful, as my patient's strength was fast wearing away. The only remaining chance, as I believed, was to complete the inversion; this I did without difficulty. It afforded relief; but the patient was too much exhausted to profit by it; she died thirty-six hours after. It may be proper to mention that when I first saw this patient, she was nearly exhausted by hemorrhage and suffering, and almost pulseless. After completing the inversion, she seemed to improve, as a moderate reaction took place; but it was short lived; she sank after this time not to be again roused. The other case, which happened within a short time, (April, 1827,) the patient was not much exhausted; as the midwife became early alarmed, and I was sent for soon after the accident. I have reason to believe, the midwife completed the inversion by dragging at the placenta, which brought the fundus of the uterus through the os externum. This was reduced after a few minutes, by gently and firmly pressing it upwards in the direction of the vagina. I persevered in this case, as industriously and as steadily as in the other, and with no better success. This woman labours under a considerable bloody discharge, but which is gradually diminishing; and is recovering strength slowly.†

* Mr. Newnham makes the absence of the neck surrounding the prolapsed part essential to a complete inversion.

† I have seen this patient within a few days, (Oct. 1827.) She has nearly recovered her usual strength, but is still pale and sickly in look.

gers, and *returned the organ, as he supposed, into its proper place.** On Saturday, (the day after the delivery,) the patient was taken out of bed, when the uterus immediately protruded out of the body, followed by a copious discharge of blood. Dr. —— was in a few minutes called in, and pushed the protruded uterus within the vagina, supposing that this was all that was necessary to be done, or rather *concluding he had returned the prolapsed part into its original situation. The loss of blood was considerable, so much so as to produce syncope*, from which she was gradually restored by cordials, friction, and volatiles. A moderate discharge still continued to flow till about twelve o'clock at night, when the pulse began to sink, accompanied with faintness and great prostration of strength." "Upon examination," says the relater, "I found *the uterus completely inverted*, occupying the whole of the vagina, *the neck reaching above the pubis*." He then declares, the fundus, by proper manipulation, was restored. This case, however, proved eventually fatal.

1307. This case, we may safely declare, was not one of "complete inversion" of the uterus; and for the following reasons:— First, because the phenomena were not those which accompany a complete inversion; there was too much hemorrhage, and too many distressing symptoms.† Secondly, because, the author expressly and conclusively determines this point, by saying, "*the neck of the uterus reached above the pubis.*" I have already pointed out the situation of the mouth and neck of the uterus in the complete and incomplete inversion of the uterus, in par. 1285.

1308. In a review of my "Essays on various Subjects connected with Midwifery," by a writer in Vol. III. No. II. p. 157, of the third series of the New England Journal, &c., I find the following observations in reference to my proposal of converting a partial inversion into a complete inversion, when there is no chance of restoring it, and the symptoms are threatening. "The practice in this case," (case second,) "was successful in rescuing the patient from imminent danger. *It left her the subject of in-*

* We presume he intends to be understood, by the words "returned the organ into its proper place," that he restored the protruded body and fundus to their natural situations.

† "But it is worthy of notice that, frequently, complete inversion is not accompanied with hemorrhage." Burns, p. 516. This obtained in Dr. Hamilton's case, and this is agreeable to the observations of others. In Dr. Denman's case II., which was a case of complete inversion, he says, "the hemorrhage was not profuse."

verted uterus the remainder of life. This last fact makes the question of adopting Dr. D's. method a very serious one, and in considering this question we are met by others. *Is there no chance of reducing the uterus after the stricture has been removed* in the manner proposed above, and *should not its reduction be attempted either immediately after or as soon as the patient is enough recruited to endure the fatigue and pain of a trial?* A case has been related to us of at least two days' standing, in which the physician, having grasped the uterine tumour in his hand, gradually compressed it, and after a long continued effort, succeeded in reducing this organ. This was related by the physician who performed the operation. *The inversion here was complete,* and this may make such a difference between the cases as to render it questionable whether similar means would be applicable to both."

1309. This critique involves a number of separate propositions, which we shall notice in their order. First, "It left her," (the patient,) "the subject of inverted uterus for the remainder of life." The question which presents itself to meet this objection is simply, whether an accoucheur is not bound to avert death when it is in his power? or, at all events, is he not bound to do, at the moment he is obliged to decide, the best he can for his patient? This certainly will be answered in the affirmative: for he has no right to inquire whether death might not be preferable to life, upon the terms he can give that life. For if he decide that it is, and he permit his patient to die, rather than subject her to the penalty, that the preservation of her life will impose upon her, he is guilty of a species of murder. It is therefore decidedly his duty, his imperious duty, to preserve life when it is in his power, be the terms of that preservation what they may.

1310. If this be granted, it will also be ceded, I trust, that I was acting strictly in the line of my duty, in affording the only apparent chance for life, or even of comfort, to an almost expiring woman.

1311. That it was an experiment, is granted; and its success was yet to be proved; it turned out fortunately, and rescued the patient, I honestly believe, from death; and if the history of this case be carefully read, (case second,) it will be seen, that it was considered altogether hopeless, after the attempt at reduction, which was conducted with all the little ability I was master of, had proved fruitless; and that the patient might be considered

in "articulo mortis;" I therefore think there can be little doubt, that I did the best the situation would permit.

1312. I would ask, for information, what better could have been done under the existing circumstances? for the patient was almost expiring; and would have very quickly died if relief had not been afforded. The attempt at restoration, the only one on which we could rely, it is seen had failed; the "*anceps remedium*," presented itself; and it proved successful. But let me now be clearly understood upon this subject, as declaring, that the proposition in question is never to be acted upon, but as the dernier resource; and that I have never proposed it but as such, will, I think, distinctly appear, if what I have said be carefully read.

1313. It is asked, "is there no chance of reducing the uterus *after the stricture is removed?*" I would ask, in turn, can the stricture be removed? Has the writer ever known it removed? If he have not, I think the question answers itself, since we have no control over it; and we fear we cannot have, as a little reflection on the situation, and functions of the parts, will show almost its impossibility; for which reason I am decidedly of opinion that a "complete inversion" never has been reduced. It is true we may suppose a case, and then deduce the possibility of restoration in complete inversion—we may imagine the neck of the uterus to be in a state of relaxation; and if it be so, no difficulty in the restoration of the fundus presents itself. But let this condition be proved to exist, before we speculate upon the advantages that would result from such a state of things. See pars. 1268 and 1339, &c., and fig. XVII.

1314. It will be seen, at once, by reference to the structure of the parts concerned in this accident, that the structure in question is nothing more nor less, than a natural, or functional condition of the os uteri; for a state of contraction is the natural state of this part, when its functional powers are in a healthy condition; consequently, it always closes after the contents of the uterus are discharged. It seems, that the writer of the article under consideration, looks upon this stricture, "as an accidental state of the os uteri, and that this condition can be removed by remedial agents;" than which, in our opinion, there can be no greater error. If this "stricture" was the effect of spasm, or of some accidental state of the os uteri, we might, perhaps, find a remedy for this unfortunate condition of the part; or it might, after a given time, relax itself, but when it is well

known to be the natural result of its structure, and that nothing but force can possibly overcome it, we may look in vain, I fear, for remedies to relax it.

1315. If the os uteri were flaccid during an inversion, the chance of restoration would be greater, nay, nearly certain; but as this condition can only be the result of a diseased state of this part, it will only take place from an accidental combination of circumstances, which we can neither command nor control. The only agent we have at command, is mechanical force: now, we know, that this power can very rarely be successfully, or even safely employed, for the reason above suggested, (pars. 1300, 1301, 1302, 1303, &c.) I shall mention, however, presently, that this relaxed condition of the os uteri sometimes exists.

1316. But, with a view to render this suggestion certain, or at least occasionally successful, it is stated in the gross, that restoration had been performed after complete inversion, by a physician who gave the account himself. He says, that he had restored the fundus after the lapse of forty-eight hours, and that the "inversion was complete." We are not favoured with any of the particulars of this case to prove it to have been complete; we are obliged to abide by a bare ipse dixit, which seems to be at once contradicted, by the very mode employed for the reduction, as we shall attempt to show. See fig. XVI.

1317. But before we proceed farther, let us observe, that the term "complete inversion" has almost always been vaguely employed. When the fundus of the uterus escapes through the os externum, it is called by Drs. Denman, Merriman, Mr. Burns, M. Leroux, and others, a complete inversion of the uterus; thereby making the situation of the fundus the distinctive sign of a complete inversion, instead of the condition of the neck of the uterus. Now, if this definition be admitted, we may look for many instances of the reduction of a "complete inversion," without a single genuine instance occurring to authenticate the success of the operation. For I have seen more than one instance of partial inversion, in which the fundus was protruding the external parts; and could cite many more.

1318. The reviewer farther states, that "there was a period in the above case, (case second,) in which reduction might have been performed." This, however, is merely opinion; and cannot be either proved or disproved, yet with a view to this, he says, "the woman was delivered by a midwife on Friday. Dr. Dewees

and Dr. Atlee were not called until the Tuesday following. These facts are worthy of notice; for should partial inversion occur, and symptoms of strangulation come on, soon after delivery, and an insurmountable obstacle seem to exist to reduction; might not some other means of treatment be adopted, than the method of the author? Would full opiates, *warm bathing*, and *even blood-letting*, be advisable, in the first instance; followed by attempts at reduction, when the effects were present, of all these means, or of some of them?" p. 158, loc. cit.

1319. In answer to the above questions, I should hold it doubtful, whether the writer of the review had ever witnessed a case of inverted uterus? If he had, I think he would not have proposed *warm bathing*, or *blood-letting*, where symptoms of strangulation had come on. He would have known that an over-powering flooding almost always attends a partial inversion, and for which the warm bath would be considered a very doubtful remedy, to say the least of it. He would also have known, that faintness, exhaustion, vomiting, an almost extinct pulse, are sure to accompany a strangulated uterus, and consequently, that blood-letting is not indicated or to be thought of. Opium is the only one of his proposed remedies that can be used with advantage; and this has always been given in large and frequent doses, the instant severe pain has shown itself; but with no other advantage, as far as I have seen, than to diminish pain; it cannot relax the contracted os uteri.

1320. He, however, in a subsequent sentence, says, "the situation of the author's patient seems to have been truly desperate, and to have fully warranted the bold and novel treatment adopted," p. 158. We are perfectly aware of all the evils that will arise from this new relation of the parts of the uterus; and also that nothing short of an absolute necessity can justify the execution of the plan proposed.

1321. If it be asked, are there no instances of the reduction of the uterus *under desperate circumstances?* and if we are to doubt the histories of such cases as purport to have been successful, where a number of days have elapsed after the inversion had taken place? I say yes, to the first question; and I would certainly say in answer to the second, that we are not to doubt the truth of such histories, so far as the *opinions* of the relaters constitute the truth. By these concessions, however, I am not to be charged with deserting the position I have taken; for though I admit every thing that the above questions in their general sense

require, I must still insist that hitherto I have not met with an instance in my own practice, nor in that of any one else, of a well established case of "complete inversion," in which, by any efforts or perseverance, the fundus of the uterus has been placed in situ. I have no hesitation to believe that the os uteri may remain for some time uncontracted, or after some time become relaxed after such contraction, in partial inversion; and that in such cases, a well-directed measure may become successful. But it must be remembered, where such instances of success have occurred, there was an absence of all severe and threatening symptoms; an evidence that the neck of the uterus could not be very strictly girding the prolapsed portion. One of the most remarkable and instructive cases of this kind, is related by Dr. Teallier, in Journal Universel, for Nov. 1823.

"A Madame R., twenty-five years of age, was delivered on 2d of September, 1823, after a labour of thirty-six hours. The placenta was extracted without difficulty, and the patient was put to bed comfortably. She continued pretty well until the 12th, when Dr. T. was called at one o'clock in the morning to his patient, who, in making violent efforts to pass the contents of the rectum, felt a bulky mass of flesh descend through the vagina, which, though it did not produce much inconvenience at the time, was followed in about an hour by great pain in the belly, the displaced parts, and in the groins, with a strong effort to vomit, and a sensation of faintness. She was much alarmed, and retired again to bed, supporting between her thighs a smooth tumour of a deep red colour, of the size and shape of a large pear —its large extremity was resting on the thighs, its pedicle was tied within the labia. Dr. T. proceeded to the reduction by returning the tumour into the vagina, but in endeavouring to restore it to its natural situation, the hardness, and the contraction of the neck, rendered it impossible; the sensibility of the organ being so much augmented, that the least pressure produced violent pain. Dr. T. suspended his attempts, with the intention to renew them when circumstances were more favourable. The patient was placed upon her back; the pelvis elevated; the thighs closed; and emollient fomentations and injections were employed —a rigid diet was observed for the first twenty-four hours. There was no hemorrhage, but little pain in the abdomen, or fever.

"On the evening of the 13th an obstinate cough came on, attended with fever, and some pain in the abdomen; but a large bleeding on the 14th removed these symptoms. On the 18th, the

condition of the patient continuing favourable, and Dr. T. finding the tumour to soften and become smaller, determined on another attempt to reduce it to its natural situation, in which he succeeded in one hour and a half, making, during this time, a moderate and continued pressure with the hand. No symptoms of consequence followed, that were ascribable to the accident."*

1322. This case is remarkable on several accounts: first. The uterus contracting healthily immediately after delivery, and continuing in this condition for several days; secondly, An entire relaxation of this organ taking place ten days after delivery, for though violent efforts were made to empty the rectum, yet these efforts could not be the primary cause of the inversion; and that for during this time the uterus must have passed through the os externum, and have required the relaxation of the neck and other portions of the uterus; and for the irritation of the rectum, and the consequent action of the abdominal muscles, could not induce this condition, though they might contribute eventually to the inversion. It is therefore, more probable that the inverted uterus was the first cause of these efforts by pressing powerfully upon the rectum; and the inversion confirmed, by the straining it created.

1323. Thirdly. The entire contraction of the uterine vessels; as it is expressly stated, there was no hemorrhage; and it is also mentioned, the tumour was "smooth," which would not have been the case, were the uterus not well contracted.*

1324. Fourthly. The gradual subsiding of the few unpleasant feelings, and the reduction of the uterine tumour, after a short time; manifesting the relaxation of the neck of the uterus, so as to admit the repassing of the inverted portions. For it is evident that this must have happened, since there were a few distressing symptoms, immediately after the inversion, such as pain, sickness, and faintness, which were certainly owing to the body and fundus being slightly strangulated, but which soon subsided, by the mouth of the uterus relaxing sufficiently to permit the reduction of the inverted portions.

1325. Fifthly. It proves that in "partial inversion," reduction may take place under certain circumstances, and by proper ma-

* Smoothness is necessarily relative—for we cannot believe, that this condition of the tumour could exist but in a moderate degree; for however firmly the uterus may have contracted, its internal (now its external) surface could not but display to a greater or less extent, a rough surface, especially at that portion on which the placenta had been placed.

nagement, at least six days after the accident. For we must insist that this was a case of "partial inversion," as the neck of the uterus is charged with the difficulty of reduction, on the first attempt for this purpose.

1326. In the inversion the uterus is the very reverse of its natural situation; its internal face now becomes the external; while the external or peritoneal surface becomes the internal, or the uterine cavity, if we may so term it—it is probable that the ovaries, tubes and broad ligaments will be included in this space. Dr. Denman informs us these surfaces do not coalesce. The woman may menstruate from the now external surface.

Case First.

On the 2d of July, 1807, at ten o'clock, A. M., I was called to the wife of Samuel N——, in labour with her first child. Her pains were weak and irregular, but pretty frequent; presentation perfectly natural. As every thing appeared promising, I left her to the care of her midwife. At four o'clock, P. M., she was suddenly delivered—considerable hemorrhage with faintings followed. I was again sent for, but did not see her until six o'clock, as she lived at some distance from the city. I found her without pulse, cold, and covered with perspiration; with laborious and hurried breathing; the placenta not delivered, and the hemorrhage continuing. I ordered her such remedies as appeared most pressingly indicated, and immediately examined her per vaginam. I found the placenta just within reach of the finger, and attempted to withdraw it, but it gave great resistance and extreme pain. I now introduced my hand, and found a tumour resembling in shape and size the swelling at the bottom of the common black bottle, and over which the placenta was spread. This case was perfectly new to me, in a practical sense, although I strongly suspected the nature of the accident. I searched for the detached portion of the placenta, from whence the flooding proceeded, and carefully detached this mass from the tumour; I then endeavoured to push up this body, but quickly desisted, from the extreme pain it occasioned, and the uncertainty that it was the best mode of proceeding to procure relief. My patient died in half an hour. I obtained leave to inspect the body, and Dr. Rush very kindly accompanied me. It proved, as I had previously suspected, to be a partial inversion of the uterus.

I dissected out the uterus, which was still so flaccid, as to be turned inside out with as much facility as a soaked bladder. The fundus dipped into the body of the uterus about three inches.*

Case Second.

On Friday, 24th March, 1808, at half past five o'clock in the morning, Mrs. P. was delivered of a living child; her waters discharged themselves six or seven hours previously, and before her midwife was called. The placenta came away spontaneously, as the midwife asserted, and to which the patient herself agreed; its expulsion was attended with great pain and great flooding; she vomited severely for an hour, and several times fainted without an abatement of the discharge. This, however, was eventually moderated by the acetate of lead, and, perhaps, contraction of the uterus itself.

After this, she continued pretty tranquil, but weak, until Sunday morning, when there was a renewal of the hemorrhage, with pains resembling those of labour. These ceased in the afternoon; but she became more alarmingly ill. She now fainted frequently, and the discharge continued. In this way she kept until Tuesday, at which time I was called, at the desire of Dr. Atlee, whose patient she now was. The doctor suspected the true state of this woman's case, and mentioned his opinion to me, to which, at first, I could scarcely assent, as almost all the cases I had ever heard or read of, as well as I recollected, had soon proved fatal; and the case I had witnessed a few months before, but served to make me doubt the doctor's representation, or rather opinion. Here, if his judgment were correct, was an instance of inverted uterus of four days' standing; a case giving contradiction to all I had heard or believed on the subject.† I, however, visited the

* This case proves, what I have stated above, that even a depressed fundus may prove fatal, by the excess of flooding; and consequently, we cannot trust such cases; as we cannot ensure the entire adhesion of the placenta, nor always provoke the healthy contraction of the body and fundus of the uterus, so as to secure the patient against hemorrhagy.

† Since writing the above, I have strong reason to believe, that the inversion did not take place until the morning, namely, Sunday; on which there was a renewal of the flooding, and the occurrence of pains resembling labour; and at this time, the uterus suffered most probably a universal atony.

At the time alluded to, from my recollections of the opinions of others upon this subject, and the fatal case I had recently witnessed, my mind was disposed to doubt the existence of this disease, especially of several days' continuance.

patient by appointment, and found her almost exhausted—her pulse so frequent as not to be numbered, and so small as scarcely to be perceived; had great difficulty in breathing, and became faint on the least motion; insatiable thirst, frequent vomiting, cold extremities, and a continuance of uterine discharge. I examined her, and found, as Dr. Atlee had declared, the uterus to be inverted. The fundus was down at the os externum, and could readily be seen partially covered with a thin coagulum of blood, when the labia were separated. The places not hid by this coagulum, were rough or spongy, and of a dark brown colour.

A very dreary prospect presented itself, by ascertaining this poor woman's situation; we believed death to be inevitable. But one resource offered itself, namely, to attempt the reduction of the fundus, hoping, as the uterus had not escaped from the vagina, the inversion might not be so complete, as to render this impossible. We accordingly proposed this attempt to the husband and friends of our patient, candidly stating her situation, and the almost certain result, if relief was not obtained in this way. They, without hesitation, submitted the case to our management.

We carefully drew her to the side of the bed, and had the knees drawn up and supported. I gently introduced my hand under the tumour, and gradually raised it; this gave me sufficient room to examine the nature and extent of the inversion. The instant I raised the womb, there was a large and sudden discharge of urine; which gave still more freedom to an examination, that was to terminate in the disappointment of the hope of the reduction of the fundus. I found so much of it had passed through the mouth of the uterus, as to render any attempt at reduction futile; and the more especially, as the tumour was augmented by its having swelled since it had prolapsed. The stricture occasioned by the contracted mouth was readily felt, and was very strict. I was extremely perplexed for the moment how to proceed, or how to announce the failure of an attempt, which, alone, at first sight, appeared to promise success or even relief; but it fortunately occurred to me, before I withdrew my hand, that I might take off the stricture by inverting the uterus completely.

Farther experience, and refreshing my memory immediately after upon the subject by reconsulting authorities, has, of course, altered the views I then had of its immediate fatality.

Agreeably to this suggestion, I grasped the tumour firmly, and drew it pretty forcibly towards me, and thus happily succeeded in slipping the remaining portion through the constricting mouth. The woman was almost instantly relieved from much of the anxiety and faintness she had before experienced; but as she was so exhausted by previous suffering and discharges, and as the internal surface of the uterus was now exposed to the influence of external air, I was prevented from feeling, or giving the slightest encouragement of recovery to her friends; but fortunately the event proved how groundless were my fears; for, from this day, she rapidly recovered, without another alarming or troublesome symptom.

Milk was freely secreted on the fourth day after, and continued freely. Our patient was twenty-three years of age, delicate, but always healthy, but more especially so during her pregnancy.

I visited this patient to-day, November 26, 1808, and found her at the wash-tub, perfectly well; suffers no inconvenience whatever from the uterus; menstruated regularly for three periods; had more or less discharge of mucus tinged with blood for four months; this last four months has had no discharge of any kind; suckles her child, which is remarkably thriving. The uterus is so much contracted as to be no longer within reach of her finger.*

Case Third.

On the 23d of November, 1808, Mrs. G—— was suddenly delivered of a large female child, which breathed and cried freely immediately after its birth. The funis was not cut until after the pulsation in the cord had entirely ceased, which was in about ten minutes. After the child was taken away, I took hold of the cord, and merely tightened it, on which she begged me to wait, as it gave great pain. I, however, traced the cord to

* I was this day, (June 1, 1810,) called to Mrs. P. on account of indisposition. She gave the following account of her situation: "She had been pretty regular ever since last report, but for the last few periods it has been more abundant, and is sometimes accompanied by the discharge of coagula; it continues longer than formerly, and, when it ceases, it is followed by profuse fluor albus." I then saw Mrs. P. again in April, 1818, and found her enjoying a very fair proportion of health—the catamenial discharges had ceased for the last five years, and she had been a widow several years past. She has never been impregnated since her accident.

the vagina, and found at the os externum a placenta I thought unusually dense and large. On gently attempting to withdraw it, as I thought it loose in the vagina, I found uncommon resistance, which I attributed to its bulk, and desisted from farther effort, hoping the uterus would, by contracting, push it completely down. In this I was disappointed;—some hemorrhage ensued. I now expected a more than common cause detained the placenta in the vagina, and began a more minute examination. I pierced the substance of the placenta with the forefinger of my left hand, and tightened the cord with my right; beneath the placenta I perceived a round hard substance, which I but too quickly discovered to be the fundus of the uterus inverted. I immediately introduced my hand into the vagina, and found the detached edge of the placenta from which the discharge proceeded. I carefully separated the whole of this mass, and withdrew it from the pelvis without the least difficulty. A considerable flooding ensued.

As Mrs. N——'s case, (case first,) gave me a complete insight of the mechanism of this displacement of the fundus of the uterus, and as I had resolved to attempt its reduction if ever an opportunity again offered, I instantly, after withdrawing the placenta, introduced my hand, and pressed the prolapsed fundus firmly with the back of my fingers, and carried it upwards in the direction of the axis of the uterus, and in less than half a minute, succeeded completely in restoring it. Mrs. G—— had not an unpleasant symptom to follow this accident.

Case Fourth.

Mrs. G—— was delivered on the 24th of December, 1808, at six o'clock, P. M., after a labour of some hours, of her first child. The placenta was extracted in about fifteen minutes without force. There was some hemorrhage and considerable pain. She was put to bed, and became very faint, and complained of great pain, which was occasionally augmented. She continued in this way, only gradually becoming worse, until nine o'clock, at which time I was sent for.

I found her with a small frequent pulse, great anxiety, extremely pale and cadaverous, and in a profuse cold sweat. I inquired respecting the flooding; but this did not appear to be sufficient to account for her present situation. I immediately suspected a partial inversion of the uterus, and thought proper to apprize her

friends of the probable cause of her distress and danger, and of the possible result of it. Every thing was left to my management. I immediately after examined her per vaginam, and found my conjecture true.

The uterus was found inverted, and its fundus was just within the os externum. I was much alarmed for the patient, as three hours and more had elapsed between the time of her delivery and my being called; she was much exhausted, and in extreme agony. I quickly introduced my left hand into the vagina, and applied the back of my fingers firmly against the tumour, while I moderated its influence in carrying the uterus directly up through the pelvis by having a gentle pressure made upon the abdomen above it. The tumour soon began to yield, and in about two minutes the fundus was completely restored.

On the third day after, my patient complained of a severe pain in the right side just above the ilium, for which I bled her freely, and purged her briskly. Nothing unpleasant supervened; she might be said to have had a good getting up.

CHAPTER XXXV.

OF TWINS, &c.

1327. Under this head I shall consider pregnancies composed of two or more children. Twins are of rare occurrence; so much so as to render it difficult to establish the proportion between them and single births; especially as their production seems to be governed by contingencies not within control, or altogether inscrutable. Thus, in the Middlesex Hospital, London, there was but one in about ninety-one, while in Dublin the proportion was greater. In France, agreeably to one return of "l'Hospice de la Maternité," the proportion was about one in eighty-eight; but, according to that of Madame Boivin of the same institution, the proportion was only one in about one hundred and thirty or forty, while in that of the "Maison d'Accouchemens," the proportion was about one in ninety-one.

1328. In this country, the average is about one in seventy-five.

From this it would appear, that climate or the state of civilization, agreeably to the remark of Dr. Denman,* exerts an influence upon the multiplication of the human species; and that where the means of life are more abundant or more easily procured, the proportion of twins is probably increased—this, however, is by no means proved; but that there are conditions and circumstances which give rise to more double births in this country is certain, if reliance can be put upon the various tables of births.† It would be a curious subject of inquiry for the political economist, and the physiologist, to ascertain on what depends the frequency of plurality of children.

1329. It is presumable upon general principles, that whatever contributes to fecundity in any country, will also contribute to the production of twins, &c., since a certain proportion must exist. We have just said that the power of reproduction is most probably influenced by the facility of procuring the means of life; this appears to be the case from the investigation of M. Benoiston, as published in the Révue Médicale for December; he concludes that wherever existence is easily supported, there will be found an abundance of children, which would seem to procure from the same cause a greater proportion of twins, &c.

1330. It is thought by many women, that the disposition to double births is hereditary; and some facts within my own knowledge seem to countenance this supposition, but they are by no means sufficiently numerous, or sufficiently strong to confirm it. I can say, however, with some safety, that it is in some instances constitutional; I know one female, who has had five twins in succession, and had not, when I had conversed with her on the subject, (some years since,) ever had a single birth. I knew another who had twins three times, but not immediately following each other.

1331. Were I to decide from my own practice, the proportion of twin cases would be greater than I have stated above, (1327;) it would be one in about fifty or sixty—but this computation would not be altogether correct; as I have been for many years occasionally called to the aid of midwives in this city, among whose cases there were a number of cases of twins—this would increase the average as regards my own practice, without giving

* System, Francis's ed. p. 534.

† Francis's ed. of Denman, in a note, pp. 613, 614. Dr. Arnell's average is one in seventy-five; Dr. Moore's, one in seventy-six.

a just view of their frequency, since these cases should be considered as properly belonging to the averages of these midwives.

1332. Triplets are very much more rare. In the returns of the cases in the "Maison d'Accouchemens," as furnished by Baudelocque, there appears to have been but one in more than eight thousand cases; in the return of Madame Boivin, of the cases of "l'Hospice de la Maternité," one in rather less than seven thousand; Dr. Arnell, one in twelve hundred, and in my own practice, in more than ten thousand cases, I have not met with an instance of triplets. Of more numerous progeny, the proportion must be infinitely small; since, in the practice of the two hospitals above mentioned, in the private practice of Drs. Arnell, Moore, and myself, amounting in all to more than fifty thousand cases, there is no mention of an instance of four children born at a birth.

1333. We are farther informed by Professor Dugés, that agreeably to the register of "la Maison d'Accouchemens de Paris," for twenty years, the following proportion of twins and triplets were registered.

In 37,441 deliveries, there were 36,992 single births; 444 twins; five triplets; but no instance of more numerous progeny was observed, either in "l'Hospice de la Maternité," at least up to the year 1821, nor in the Hôtel Dieu, before the establishment of the maternity, for sixty years previous to the year 1821; though the total amount of cases in these institutions amounted to 108,000.

1334. But he adds, that "instances of quadrigeminii have occasionally been met with. Lately the journals have announced a case of this kind: and a similar instance occurred in Paris, in October, 1823; and Gottleib mentions a case of a woman at Strasburg, who had eleven children at three deliveries, of course making a recurrence of quadrigeminii twice, and of triplets once."*†

* Révue Medicale, tom. 1, p. 340.

† As regards the number of fœtuses, fable has exerted itself to an almost endless extent; thus, the story of the Countess of Hannenberg may be cited as an instance. She, in consequence of a curse pronounced by a beggar-woman, to whom she had refused money, was delivered of three hundred and sixty-five fœtuses, that is, one for every day in the year, in fulfilment of the wish of the offended mendicant, which was, "that she might have as many children at a birth as there are days in the year." The curse was said to be accomplished; and in proof of it the fœtuses are shown to strangers that visit the museum at Leyden. This fable did very well for the year 1276; but, were the like to happen now, it would be more scrupulously investigated, and more rationally accounted for. In the case just

1335. In this country it is not very unusual to find announced in our public prints, instances of four children; it may, however, be questioned whether such are as frequent as such proclamations declare. We, however, find in the Albany Argus, the following account of "unparalleled fecundity." Dr. O. F. Paddock, a respectable physician of Fort Covington, Franklin county, gives, in the Franklin Telegraph, an account of an extraordinary birth of *five children* at one time, from the same mother—three daughters and two sons. Four of them were born alive, but lived a short time. The birth was premature three months, but they were perfectly well-formed and well-shaped. The average weight was about two pounds, and not much difference in their size. Their parents lately emigrated from Ireland, and arrived in this country in August last. This is rendered more remarkable by the fact, that the mother of these five was delivered on the 20th of last February of two—making, in the whole, seven children in less than nine months. The last were born on the 25th November, 1826. "Dr. Ryan, the learned editor of the *London Medical and Surgical Journal*, states that he was called to a patient, aged forty-one, of a sanguine temperament, who had menstruated at the age of twelve, and married between eighteen and nineteen. She had a seven months' child in the eighth month of her marriage—had twins about the fourth month three times during the year 1829, and again December 31, when she was attended by Mr. Whitemore, of Cold Bath Fields, and delivered of two infants; and on January 28th, 1830, she was attended by Mr. Thomas, of Bagnigge Wells Road, and delivered

noticed, the sexes were pretended to be discoverable; and all the males were called John, and all the females Elizabeth, at their baptism.

A slight resemblance, in former times, was sufficient to elicit a name similar to the supposed prototype; this was particularly the case in the nomenclature of anatomy—witness the names of the different portions of the brain; the bones of the wrist, and of the foot. It, therefore, required but a trifling exertion of the imagination, in former times, to fashion coagulated fibrin into embryos, as it very much resembles human rudiments of five or six weeks old; for we have frequently been consulted about the nature of this product, in cases of dysmenorrhœa; and, indeed, the resemblance is much stronger than we should at first sight imagine. I would, therefore, account for the enormous (supposed) progeny, of the Countess of Hannenberg, in this manner; namely, that she had discharged per vaginam, a large quantity of modified fibrin, in consequence of some pathological condition of the uterus; especially as she had arrived at that period of life in which menstrual aberrations are common; for it is stated she was about forty years old. Dr. Ramsbotham supposes them to have been polypi, but we are of opinion that it was altered fibrin, for the reason stated above.

of an infant, which he considered of the same age as the preceding. On the 7th of June last, (1830,) she aborted at the third month; and on the 9th, a second fœtus was expelled; she was attended by Mr. Sandell; and as there was no discharge whatever from that time to this, considers herself still pregnant. The abdomen is about the size of a woman in the fifth month of utero-gestation. She has had twenty-four children in twenty-one years. She menstruated regularly before marriage. She is always in good health when suckling, and ill when breeding; she always becomes pregnant about the fifth month of lactation. Her mother is seventy years of age, and is in good health; she has had eighteen children born alive. A relation of her husband has had thirty-two children including miscarriages." Amer. Jour. of Med. Sciences, for Feb. 1831. The author has lately conversed with a lady, who was then in her thirty-eighth year, who declared to him that she had been pregnant two and thirty times; of this number eleven were born alive and at the full time. She repeatedly miscarried of twins, and no abortion was less than near three months. She had been married nearly twenty-three years.

1336. The case (1335) is styled "unparalleled;" but Dr. Dugés states, that there is a case mentioned,* on the authority of Petretein, a Greek Physician, in which the woman was delivered prematurely, (seventh month,) of three living females, and one dead, and one boy, all equally well developed.†

1337. Women who are more than ordinarily large, are apt to suspect themselves pregnant with twins, and on this account much anxiety is always expressed. The accoucheur is not unfrequently consulted, and his opinion requested, on this momentous subject, so soon as this fear is excited; but much caution should be used in answering this question; indeed, it should always be resolved in the negative, and for two reasons especially; first, because it is impossible to decide it positively; and secondly, if it could be, it never should be, as much mischief might arise from the uneasiness it might produce.

1338. We have no certain marks before labour by which we can determine there is more than one child in the uterus: a number of signs‡ are recorded, purporting to declare this condition;

* Biblioth. Med. tom. 19, p. 374.

† Révue Méd. loc. cit.

‡ The enumerated signs which purport to decide the woman to be pregnant of twins, are—1st. The extraordinary size of the abdomen of the woman. 2d.

but not one of which can be positively depended on. Baudelocque and Denman say the same thing: the former is of opinion that the union of all these signs sometimes gives strong presumption of the existence of twins, but that "touching alone can dissipate our doubts, and that only at the last months of pregnancy." "For," says he, "when the belly is so large as to give the suspicion of two children, if there is but one, it is always very moveable, because it is then in a large quantity of water: we easily move it by means of the finger introduced into the vagina, and its rolling is never more manifest than when we do that. When there are two, that movement is scarcely sensible; we easily distinguish that the child we endeavour to move by touching, is surrounded by only a little fluid, and that it is encumbered by another solid body; if we apply the hand on the women's belly in one of these movements, when the parietes of the uterus are supple, and as it were, slackened, we may discover these children as clearly as in other cases we distinguish the feet, the knees, or the arm of that which is single."*

1339. The whole of the information we can gain, either by taking into consideration the enumerated signs, or by touching as proposed by Baudelocque, can never amount to more than presumptive evidence; as the whole of the signs have been known to exist without the woman being pregnant of twins. And the quantity of liquor amnii differs from a few ounces to several pounds in even single pregnancies; therefore, no certain conclusion can be drawn from the mobility or immobility of the fœtus in utero.

1340. Dr. Dugés says, "the most unequivocal sign of the existence of twins, is the presence of two pouches of water at the orifice of the uterus. He says he has met with this circumstance; so also does Madame La Chapelle. One of these pouches may be more round than the other, and contain some portion of the fœtus; the other is flattened and curved, (courbée,) and for the most part contains only the liquor amnii."† I have never met with such an instance; nor do I recollect it having been mentioned before.

The division of the abdomen into tumours upon its anterior surface, occasioned by the unequal stretching of the recti muscles. 3d. An œdematous condition of the inferior extremities, after the third or fourth month; and, 4th. The various or numerous places at which the woman feels motions or stirrings. Dr. Kennedy, of Dublin, and others have declared, that the motions of two hearts can be distinctly perceived by the application of the stethoscope.

* System, Vol. III. p. 442.

† Révue Méd. loc. cit.

1341. The uncertainty whether a woman be pregnant of one or more children, fortunately is of no consequence, until the labour has positively commenced; for, previously to this time, our conduct in every respect should be the same as if there were but one child. But at this period it would in many instances be extremely useful, when the children were offering untowardly; as the cause of difficulty would then be ascertained, and the indications fairly declared. In cases of twins, the situation of the children, either as regards themselves, or the pelvis, may be more or less favourable, and consequently, complicate the labour in proportion.

1342. The situation of twins or triplets may be such as regards each other, as to offer almost insuperable difficulties to delivery. Such was the case, in the history of a twin labour, given by Dr. Erwin: the head of one fœtus was placed so closely over the neck of the one which presented the breech and was delivered all but the head, that this part could not be made to descend by any force, or ingenuity, that this physician could employ. The crotchet was resolved on and used: after this, by great exertion, the head was extracted; but to the surprise of the gentleman, it was uninjured by the crotchet. This pointed out the situation of the heads of the children, as stated above.

1343. Dr. Clough* also met with an instance, in which great difficulty was experienced, but not equal to the one related by Dr. Erwin. Such cases bid defiance to rules: every thing must be left to the good sense and discretion of the practitioner.

1344. Twins may, first, be enclosed in one common covering of membranes, and inhabit the same nidus, and float in the same waters; secondly, they may each have a separate amnion, while the chorion may be common to both; thirdly, each may have its own membranes, waters, and placenta.

1345. The different situation in which twin children may be placed while in utero, especially the first two, (1344,) disturb every projected scheme, with respect to impregnation; they unsettle that which has been hitherto thought pretty well proved, as regards the ovaries, the fecundation of ova, and the absolute nature of the ovum itself; and throw into confusion that which has been thought clear; or, they oblige us to extend our notions of the powers of the corpora lutea, very much beyond what they have hitherto been.

* Lond. Med. Journ. vol. 25.

1346. They disturb (1344,) all the schemes for impregnation, since they all suppose, that each ovum is a seperate and distinct germ, and included in distinct coverings; yet two are found involved in the same common covering with two umbilical cords, and with one placenta. It unsettles that which has been thought pretty well confirmed as regards the ovaries, to wit: that they furnish ova for impregnation, upon different portions of its surface, yet two embryons are found to bathe in the same waters, and with one placenta for their support; providing, it would seem, that an ovum may contain more than one germ, which may be fecundated at one and the same time. They throw into confusion that, which has, especially of late, been thought perfectly clear and well understood, as follows: that the corpora lutea furnish the ova for impregnation; that each corpus luteum yields its own ovum, and that each ovum brings with it, from its nidus, its own chorion and amnion; yet they are both found common to two children; or the chorion alone common, and each has its amnion; yet with distinct cords and a placenta in common—now, I would ask, how this can be, agreeably to our present notions of impregnation? Does it not oblige us to extend the powers of a corpus luteum, and make us admit, that one ovum may contain the rudiments of two fœtuses, or oblige us to call in question the arrangements just spoken of?* (1345.)

1347. The third situation of fœtuses in utero, (1344,) proves, that two ova may furnish embryos with their own coverings, since they exist separately and distinctly in some cases of twins: and their separate existence renders it more than probable that they were the product of different ova, and as probable that each issued from a separate ovarium. For, if we do not admit this, we must allow that, which not only wants proof, or even probability, and very much more difficulty to reconcile; namely, that a Fallopian tube can successfully transmit two ova at one and the same time, or consecutively; which, agreeably to all the present known schemes of the ovum getting possession of the uterus, would be very difficult to reconcile, though not, perhaps, impossible; but by admitting a simultaneous action in the tubes,

* May we not reasonably doubt, that two children can float in the same waters as an original disposition of them? May we not suppose that the muscular exertions of the children may have broken the separating membranes, and thus permitted the waters to unite. For it cannot be doubted, that they have been found together: as Dr. Denman, (Francis's ed. p. 541,) tells us, his friend, Dr. Sims, informed him of a case of twins, where the funes were so closely twined togegether, as to appear but one.

and each ovarium furnishing an ovum, the explanation is easy; therefore, to be preferred. But a truce with speculation.

1348. The labour of a woman pregnant with twins, begins in every respect like a labour in which there is but one; but its progress, in general, is neither so regular nor so rapid. The latter circumstance is not difficult to explain; since it is impossible that either child can receive the undivided influence of the contracting uterus, and, therefore, it cannot be so rapidly expelled; or they may be so situated as to impede, if not to oppose, each other's exit; hence, the labour is slower, or at least with the delivery of the first of the children; but with the second it may be quicker, nay, even rapid. This being the case, if we could even determine before hand that the labour is a twin case, we should not alter our conduct, except there be something in the labour itself, which would require interference, independently of its being a compound pregnancy.

1349. In general, nay, almost always, we do not know we are encountering a twin case, until after the birth of the first child; we may then suspect this to be the case; 1st. When the child is small compared with the size of the abdomen of the mother, and the quantity of water discharged; 2d. If the abdominal tumour have not subsided as much as if it were a single child; 3d. Because the child may be felt through the abdominal and uterine parietes; 4th. Because there is, in general, a renewal of uterine contractions, and the child can be felt per vaginam, if its membranes have given way, or the membranes themselves when distended with the waters if they are entire.

1350. After the birth of the first child, and we have ascertained that there is a second, it then becomes a question, what is to be done with the second? Accoucheurs seem to have puzzled themselves in answering this plain and simple question, and have attempted to lay down rules, which are calculated to embarrass, rather than instruct, the inexperienced practitioner. The rule upon this subject is plain, and void of all ambiguity, since it is founded upon the disposition and situation of the uterus itself. Baudelocque alone is rational on this subject.

1351. I have said the rules of practice in cases of twins, after the birth of the first child, were free from all difficulty or ambiguity; for after one child is expelled, one of two things must happen, either that pains will pretty quickly ensue, and deliver the second if its position be natural, or that there will be a suspension of pain.

1352. If the first case obtain, we must conduct the labour as if it were an original labour, and not to be interfered with so long as there is a rational expectation that nature is competent to relieve herself; and if this promise be not made, or seasonably fulfilled, we must interfere as upon any other occasion, where interference might be necessary. When pains follow the expulsion of the first child, there is every expectation they will accomplish the delivery of the second; first, because it will receive the whole influence of the uterus, which was divided before; secondly, because the subsequent pains will be more powerful than the antecedent ones; since the uterus is now smaller, and its tonic contraction more perfect, which, (cæteris paribus,) always increases the alternate contractions of this organ; thirdly, because the parts have been dilated, and are of course made to yield by the passage of the first child; therefore, there is less resistance to be overcome.

1353. If the second situation, namely, where there is a suspension of pain, our duty is equally clear—for it will depend altogether upon the situation of the uterus itself. This condition will consist in its being uncontracted or contracted.

1354. If in the first condition, it will be attended with hemorrhage,* or be free from it—if with flooding, we are to deliver as we would in any other case of hemorrhage, and be regulated by the same rules which govern upon such occasions; if no hemorrhage be present, we must solicit the contraction of the uterus by frictions upon the abdomen, until it contract. If it be contracted, and pains do not pretty soon follow, I have long thought it best to make the labour an artificial one, and for the following reasons.†

1355. First, because if pains do not come on in the course of a half hour after the tonic contraction of the uterus is well established, it is altogether uncertain when they will take place; and the patient is then left in great anxiety for the event; secondly, after the expulsion of the first child, a hemorrhage or other accident may ensue which will oblige us to deliver under all the embarrassments it gives rise to; thirdly, there is nothing to apprehend in terminating the labour, as the tonic contraction is secured; and no difficulty can be created, since the uterus will readily per-

* The same may be said of either of the other accidents that may complicate a labour, (651.)

† I believe it would be a good general rule of practice, when the contractions are feeble, or very far apart, to administer the ergot.

mit turning, if the head present; or to deliver, as directed when either the breech, feet, or knees present, when there is a necessity of making an artificial labour of the case; fourthly, we remove at once the anxiety of the woman; which, if long continued, may have a very unfriendly influence upon the powers of the uterus.

1356. All rules of conduct, taken from the lapse of time, are liable to very serious objections; for mere waiting does not ensure the proper condition of the uterus to render our acting safe; and we are never to proceed to delivery if that proper condition, (1201, 1202) does not follow, however long we may have waited, for, at the end of four hours, (Dr. Denman's* rule,) it may be just as improper to deliver, as it may have been at fifteen minutes after the birth of the other child; and if contraction justifies us to deliver at the end of four hours, it justifies us at any intermediate period at which it may take place. And if we are to act at the end of four hours, be the condition of the uterus what it may (for nothing is said of the state of this organ,) we shall as certainly do mischief by our interference if the uterus be not contracted, as if we had acted at any other antecedent period. If, then, we do not ensure the contraction of the uterus by waiting, we gain nothing; and it will be proper, therefore, to act whenever we are assured, that the powers of the uterus are in full and healthy play, be this when it may.

1357. Should any of the enumerated accidents (651) complicate a labour of twins, we must act as in any other case; taking care at the time, to distinguish the proper feet, when we are about to bring them down, and when both sets of membranes are ruptured: but if they are not, and we discover it to be a twin case in proper time after we have commenced the operation, to be careful not to rupture the membranes of the remaining child. If the breech, feet, or knees offer, we must bring down the feet, or act upon them, as has been directed—or if the head present, and the labour be far advanced, we must use the forceps, though we are certain it be a twin case. Or should any thing untoward take place during the transit of the second child, we must act as the nature of the case requires, without reference to its being a twin.

1358. In my estimation, Mr. Burns† lays down two very doubtful rules for the management of twin cases—the first is, that "if

* Introduction, Francis's ed. p. 540.

† Principles, James's ed. p. 406.

effective pains do not come on in a quarter of an hour, the child ought to be delivered by turning." The second is, "if the position of the second child be such as to require turning, *we are to lose no time*, but introduce the hand for that purpose before the liquor amnii be evacuated, or the *uterus begin to act strongly on the child*."

1359. If we were to act agreeably to these directions, we should almost constantly have cause to repent the enterprise; for we certainly should do mischief by exposing the uterus to a state of atony; and thus provoke, perhaps, a fatal hemorrhage. I must repeat, in such cases, we should pay no regard to the time which may elapse after the birth of the first child; it is to the condition of the uterus alone we should direct our attention, and that alone should regulate our conduct. For, if the uterus be well contracted, we may act at any period it may be necessary, with perfect safety; but if it be not, nothing can justify the interference, save, that the patient may be attacked by one of the accidents enumerated above, (651.)

a. On the Management of the Placenta.

1360. From what has been said above, (1344, &c.) it will not always be found that each child in twin cases will have its placenta; yet it is generally the case; and though only connected by interposing membrane, we are obliged to deliver them together. Before, however, we make the attempt to deliver the placenta, when we have reason to suspect there is another child; or when this has been ascertained, we should apply two ligatures upon the funis of the delivered child, and cut between them; as the cut extremity in such cases yields a good deal of blood sometimes; and occasionally, it is said, even to the exhaustion of the second child. We should never attempt to deliver the placenta in twin cases, until both children are born.

1361. This bleeding may happen where both funes belong to one placenta, or where the two children are supplied by one original cord, branching some distance from the placenta to furnish a funis to each—and, as we cannot beforehand ascertain such deviations, it is best to guard against the chance of mischief by the application of a ligature: this may be removed after the birth of the second child, that it may discharge some of the blood contained in the placenta, for the reasons before stated, (554.)

1362. The delivery of the placentæ of twins must be conducted upon the same general principles, as if there were but one—but rather more time should be given, and caution exercised in twin cases; because the uterus has been more distended during gestation and more severely exercised sometimes during parturition with a single birth: consequently, the tonic contraction will be more slowly and reluctantly performed, and the woman more exposed to flooding. Brisk frictions should be immediately instituted, and sufficiently persevered in, to ensure the object for which they were employed.

1363. When the tonic contraction of the uterus is confirmed, we may then, *and never until then*, proceed to the delivery of the placentæ—they will be found either occupying the vagina, or be beyond the reach of the finger. If in the first situation, they may be extracted by a small force exerted upon the cords, and the aid of a finger introduced into the vagina. If in the second, we must co-operate with the uterine contractions, when they exist, by pulling gently, but pretty firmly by the cords, but not with equal force on each—if we do, we tend to bring both placentæ at the same time to the os uteri; and their united bulks will not readily pass it—we should, therefore, act more firmly upon the cord first out, as it is more than probable its placenta is nearest the uterine orifice, and will more easily descend, and at the same time bring the other with it.

1364. Should there be no pain to aid in the expulsion of the placentæ, we must continue the abdominal frictions, and act occasionally upon the cords, by applying rather more force upon the first than upon the second, for reason just stated, (1363.) A slight discharge of fluid blood, or small coagula, almost always announces the descent of the placenta; this is equally observed when there are two; and when we find this taking place, we must continue a gentle attractive effort, until they are lodged in the vagina—from this they may be withdrawn, as already intimated, (1363.)

1365. Dr. Denman says,* "When the placentæ are separate, that of the child should not be extracted before the birth of the second child, as a discharge of blood must necessarily follow, and perhaps a hemorrhage." This certainly would have been rational advice, and highly useful, were we informed, how we are to know beforehand, when the placentæ exist separately. I

* Francis's edition, p. 541.

have already directed, (1363) that the first placenta is not to be meddled with, in twin cases, until the second is ready for delivery; and with this direction I believe we must rest satisfied, without ascertaining whether it be separate or connected.

1366. Dr. Denman farther says, "If there have been a necessity of extracting the children by art, *it is commonly*, but not universally necessary to extract the placentæ also by art; but if the placentæ are detained beyond a proper time, *we will say two hours*, after the birth of the second child, it is desirable, though there may be no very urgent symptoms, that we should inform ourselves of the cause of this detention, and act accordingly.

1367. The first of these remarks, namely, that, the interference of art is necessary to the delivery of the placentæ, if it has been necessary for that of the children, is by no means agreeable to my experience; nor do I see the slightest relation between these events; and if acted upon by inexperienced practitioners, as it certainly will be, when advised by such high authority, much mischief will ensue. And to the second, I must again object, as the rule is taken from time: which can never in itself constitute a reason nor develope a principle; for, as I have upon another occasion remarked, it may be just as improper at the end of two hours to deliver the placentæ as it was immediately after the delivery of the last child.

1368. If artificial means be resorted to, care should be taken that both placentæ are detached from the uterus, whether they exist separately, or if they be merely joined by membrane; if there be but a placenta, it must be removed, as upon common occasions.

1369. In cases of twins, a much larger surface is occupied by the placentæ than if there were but one: we should on this account be very careful to renew the frictions upon the abdomen, after their expulsion, that the uterus may contract as much as possible; and thus tend to diminish the subsequent discharges, which are but too apt to be in excess.

CHAPTER XXXVI.

OF PRETERNATURAL LABOURS.

1370. Agreeably to the classification I have adopted for labours, it will be at once understood, that the class termed preternatural, will consist of all such, as shall not present either the head, the breech, the feet or the knees. Authors have made a very numerous collection of preternatural labours: some of which occur so rarely, as to be seldom, or perhaps never met with, even by an old and experienced practitioner.

1371. Baudelocque has been too lavish in his divisions and subdivisions of this class of labours; for they serve rather to confuse than to elucidate. To the inexperienced practitioner, his distinctions are appalling; for they cannot well be retained in the memory; consequently, cannot always be acted upon. But little injury can arise from this want of memory, provided the general principles which are to govern in such cases be recollected; for they are all to be treated by "turning."* If, then, the principles laid down for this operation be well recollected, little or no embarrassment can present itself.

1372. It may, however, not be amiss to remind the inexperienced practitioner, of several of the most important rules upon the operation of "turning."

1373. 1st. This operation must never be attempted so long as the os uteri is not dilated or easily dilatable.

1374. 2d. That the woman must be placed upon her back, that the utmost freedom may be given to the operator's hands.

1375. 3d. That the time for the introduction of the hand into the vagina, is during a pain, after having been well lubricated.

1376. 4th. But after the hand is in the uterus, every attempt to turn must be made in the absence of pain.

1377. 5th. That it is rarely a matter of indifference, which hand is to be employed for the purpose of turning; therefore, the rule upon this subject must never be violated.

1378. 6th. That whatever be the situation of the child within the uterus, the feet must be brought into the pelvis, so as to bend the body forwards. See Chapter on "Turning."

* Except such cases as leave no doubt of the death of the child, and which may be terminated by the crotchet.

1379. I shall, however, treat of one case of "preternatural labour," from the general class; because it is by far the most frequent, as well as the most difficult—this case is the "presentation of the arm and shoulder."

CHAPTER XXXVII.

OF THE PRESENTATION OF THE ARM AND SHOULDER.

1380. Should the hand descend into the pelvis, either by not keeping it up as directed, (716,) when it accompanies the head or any other part; or when it seems to fall into that cavity at the time the membranes give way, it will almost always become a source of trouble; especially if under the care of a practitioner who supposes he cannot do better than to act upon it, to effect delivery. When the hand is not supported, so as to allow the head to descend without it, the arm is almost sure to come into the passage: this frequently, but not necessarily, declares the shoulder at the orifice of the uterus.

1381. Or the shoulder itself may present originally, without the hand being down, as a necessary consequence. This presentation is more frequent than any other, in which the head, knees, feet, or breech, do not present. The roundness of the shoulder favours its taking this position.

1382. I have chosen to consider under one head the presentations of the shoulder, and the arm; because the indications are precisely the same, as well as the mode of acting, for the arm itself produces no essential difference in treatment.

1383. Before the mouth of the uterus is well opened, and the membranes are rent, it is difficult to distinguish the shoulder; but when these changes have taken place, the clavicle, scapula, and ribs serve to distinguish this part.

1384. The shoulder may present in four different ways at the superior strait: but these positions become very difficult to distinguish, unless the arm be down at the same time.* When

* Velpeau thinks by his arrangement of these presentations of the shoulder, much ambiguity is avoided—he designates them by the titles of "dorso-pubic, dorso-sacral, and right and left dorso-iliac." We see no advantage in this—for in proportion as distinctions, (which are necessarily arbitrary,) are multiplied, the

the arm is down, the hand will serve to discover the position of the shoulder. The hand will offer itself at one of the sides of the pelvis, and its back or palm, will present either anteriorly or posteriorly: the position of the shoulder must, therefore, in such cases, be learnt from the particular situation of the hand.

1385. In the first position of the shoulder, the head and side of the neck of the child is to the left side of the pelvis, and the *right arm* down; the back of the hand will be anterior, the palm posterior.

1386. In the second, the head and side of the neck will be toward the left iliac junction; the palm of the *left hand* will then face outwards: the back will look to the posterior part of the pelvis.

1387. In the third, the head and side of the neck will be to the right side of the pelvis; the *left arm* down, with its back looking outwards, and the palm inwards.

1388. In the fourth, the *right arm* will be down, with its palm looking outwards, and its back inwards.

1389. If turning be resorted to, it will avail much to employ the proper hand. In the first and fourth, the right hand must be used; in the second, and third, the left.

1390. In performing this operation, the rules laid down for turning in general, must not be neglected; that is, the feet must be brought down in such a manner as to bend the spine anteriorly, &c. &c.

1391. The presentations now treated of, are certainly very far from favourable; yet they are by no means so menacing as is commonly represented. If these labours were treated according to correct principles, and at the proper time to make the principles available, they would offer no difficulty beyond what is usually encountered in turning, unless complicated by accident, (651.) But if the favourable moment for acting be not taken advantage of, or should not have presented itself, much difficulty may be experienced; and the case becomes subject to interference; by cutting instruments, &c.

1392. It should be constantly borne in mind, that the arm it-

greater will be the confusion to the student. Indeed, Velpeau admits this himself just before, and instances, in proof, the arrangements of Baudelocque, Meygrier, and Gardien—we shall therefore continue to adopt the order of Baudelocque, especially as none have improved upon his plan. Velpeau, we think extremely obscure in his directions for the management of "Shoulder presentations."

self offers no indication, save that of pointing out the position of the shoulder; therefore, no manœuvre performed upon it, can advance the interests of either mother or child, or facilitate the object of the operator. Consequently, all the cruel, as well as absurd treatment to which the arm is sometimes subjected, such as scarification, amputation, &c., should always be avoided; since it can never improve the process of turning, if the child be dead; and it will almost necessarily destroy it, if living.

1393. In a well-formed pelvis, the presence of the arm offers no embarrassment to the operation of turning; therefore, every attempt to remove it from the inferior portion of the pelvis, either by trying to replace it within the uterus, or by amputation, is only losing time, or improperly irritating the parts, or subjecting the protruded part to an unnecessary, and sometimes to a cruel operation.

1394. There is no presentation that gives rise to so much bad practice, as the presentation of the arm; for its mechanism is generally but very ill understood. The arm itself, is almost constantly supposed to offer great difficulties, by its presence in the vagina; hence, it has been scarified, twisted off, or amputated, to the disgrace of the profession. It is true, that in most instances these severe operations have been performed after the supposed death of the child, but in many other cases we fear, that the life of the child has not been taken into consideration, (1396.)

1395. The death of the child should never be admitted with too much facility; but especially, in the cases under consideration, as no operation upon the arm itself can ever increase the chance of gaining the feet. Therefore, in arm presentations, the amputation, or other operations upon it, should always be forbidden; especially as the signs of death are in many instances as equivocal, as the evidences of life are obscure.

1396. Chapman relates a most instructive lesson upon this subject; a lesson which should always be present to the mind of him, who may feel disposed to act in defiance of the best experience, by amputating the arm under the pretext that the child is dead. In the case alluded to, the accoucheur amputated the arm, on the presumption that it was dead; it was, however, alive, and lived to manhood. And more recently, a surgeon was sued for amputating the protruded arms of a child from an expiring mother, and where it was not possible to render assistance as he believed in any other way. The child, though supposed long dead, proved to be alive.

1397. It is, therefore, best not to meddle with the descended arm; for if turning be attempted, it offers no difficulty to the passage of the hand; and if the crotchet, or any cutting instrument be resorted to, it cannot interfere with its operation.

1398. The indication in these presentations is to bring down the feet, and deliver. It has, however, been suggested, that we may attempt the restoration of the head to the cavity of the superior strait, by removing the shoulder from it; I believe this to be altogether theory. I do not even advise the attempt; for, independently of its difficulty, I am persuaded that it would be attended with more pain and risk to the patient, and injury to the child, than a well-conducted turning.

1399. Mr. Barlow is of opinion that this is practicable: he says, "I come now to treat of that species of preternatural presentation where one or both arms present, and the head either resting on some part above the brim, or advanced along with either of the superior extremities into the pelvis. The mode of delivery sanctioned by authors in this division of presentation, appears involved in some degree of ambiguity; for little variation of practice has been adopted, whether the presentation of the hand or hands at the brim of the pelvis, or that one or both arms descended low in the vagina, the same plan of delivery in every state, however dissimilar the case may be, seems to be invariably pursued. I conceive there requires much discrimination as well as variety of practice necessary to be adopted, according to different situations and stages in which the fœtus is found to present under this distinction of preternatural presentation."

1400. "If the accoucheur has the management of a case of this kind from the time of the discharge of the liquor amnii, and the hand of the child is ascertained to present, and the head *can be brought into the axis of the pelvis*, it should be effected as early as the state of the os uteri will admit, and the reduction of the hand in this state of the case may frequently be accomplished by pushing it up and supporting it at the brim of the pelvis till the head becomes engaged in the superior strait: if the other hand should protrude, it may be encountered by a similar expedient. If these attempts prove ineffectual, I would recommend the accoucheur to introduce a piece of sponge or other soft substance along the cavity of the pelvis during the absence of pain, and wedge or restrain the presenting hand or hands above the superior strait, till the head has cleared the brim of the pelvis."

1401. On these directions it may be proper to remark, that

when the arm or arms present, it can never be proper to attempt to bring the head of the child to "the axis of the pelvis," and for the following reasons: first, the arms cannot present before the membranes are ruptured; and after this the parts will have departed to some distance from the head; and in proportion as they advance in the pelvis, will the head depart from "the axis of the pelvis." Secondly, it most frequently happens, that at the moment the arm has escaped from the orifice of the uterus, this part is no more dilated than is sufficient to permit the arm to pass; or, if it has been more largely dilated, it will be found to have contracted itself so as to embrace the arm pretty strictly; consequently, much force would be required to pass the hand into the uterus. Thirdly, that if the hand be made to pass the contracting os uteri, it will be found, that its operations within the cavity of this organ, will be extremely limited, and by no means adequate to the reduction of the head. For every attempt to change its position will be opposed by the contracted uterus, which now, by virtue of its tonic power, accommodates itself to the various inequalities of the surface the child presents to it. Fourthly, if it were even possible to restore the head to "the axis of the superior strait," the arm or arms would accompany the head, and thus create great embarrassment to the progress of the labour, (718.) Fifthly, I believe it will be found the best practice, when we are under the necessity of introducing the hand into the uterus in such cases, to finish the delivery by turning.

1402. Mr. Barlow's directions respecting the attempt to return the arm or arms, I believe would be altogether unavailing, though, as we have said elsewhere, (716,) that the hand very often may be prevented from prolapsing into the vagina, by supporting it until the head shall pass under it, but this can never be the case with the arms. It will be seen that Mr. B. has not made the necessary distinctions between the hands accompanying the head, and the arm presentation;* for the latter always implies the exit of the arm from the os uteri; while, in the former, the hands are enclosed in the uterus, or but very little advanced beyond the edge of its orifice. Now, there is an essential difference between these two conditions, and they require very different modes of treatment; the directions of Mr. B. may answer very well when

* Mr. Barlow speaks of the presentation of both arms—a presentation we have never seen, though we do not pretend, on this account, to deny such an occurrence.

only the hands offer, but they would be totally inadequate for the restoration of the head.

1403. When the arm accompanies the head, it is found that it almost always advances, pari passu, and it is true, that this circumstance is not always subversive of the natural order of the labour. But this can only happen, where the diameter of the head and arm do not exceed the diameter of the pelvis. See Section on the presentation of the hand with the head, p. 256, par. 716, &c.

1404. The circumstances which would render the restoration of the head to the axis of the pelvis practicable, (if it be practicable,) will also give facility to bringing down the feet; namely, a sufficient relaxation of the uterus, and the absence of pain. Moreover, if these conditions obtain in the first instance, it will, of course, be very uncertain whether the powers of the uterus will be sufficiently restored to expel the child after the adjustment of the head; consequently, much time might be lost, and much anxiety be created, and this for a success, that is altogether contingent.

1405. There are three modes of proceeding in presentations of the arm; the first, as I have just stated, is to turn; the second, to trust to the powers of nature to produce what has been termed the "spontaneous evolution of the child," and the third, is the employment of cutting instruments to the child itself.

1406. When the arm presents in a labour at the full period of utero-gestation, we should entertain no hope or expectation that nature will relieve herself while the child continues in this position;* consequently, this case must be always regarded as "preternatural," and the bringing the child by the feet, is the only operation that can be performed with a view to the safety of both mother and child.

1407. Notwithstanding the indication in this case is so obvious, yet it is not *always* practicable to fulfil it. This arises from—1st, the condition of the uterus; and 2ndly, from the situation of the arm and shoulder within the pelvis.

Sect. I.—*Of the Condition of the Uterus.*†

1408. I have already noticed above, (1392) that the protruded arm or hand offers of itself no difficulty to turning; the difficulty

* Unless the rare occurrence of "spontaneous evolution" by a forced construction be considered an exception.

† Dr. Blundell's directions for the management of arm presentations are not

exclusively depends upon the condition of the uterus, and especially of that of its mouth. If both be in such a state of relaxation as will admit the passage of the hand without much force, (as often happens soon after the escape of the waters, where the labour has progressed regularly,) no more, or perhaps, sometimes even less difficulty will be experienced, than in turning when the head presents, and the uterus equally favourably disposed.

1409. Our attention should, therefore, be constantly directed to the state of the uterus, and especially to that of its neck; and our conduct should be regulated alone by their condition: for whatever may be our desire to aid the suffering woman, or relieve the threatened child, we must never incur the risk of being disappointed in both, by forcibly entering the resisting os uteri. When violence has been committed on this part by mechanically making it yield to the hand, inflammation, laceration, and gangrene have sometimes followed; nor is this all: the operator has been foiled in his attempt to bring down the feet by the os uteri contracting itself round his wrist, and thus obstructing the descent of the child. I once witnessed death to follow immediately, or rather *during*, a rude attempt to turn. The operator had with great difficulty passed her hand, (the patient was under the care of a midwife,) through the os uteri; and after a long and uncertain search, became possessed of the feet: in attempting to bring them down, she exerted so much force, as to rupture, (I believe,*) the uterus. The poor woman expired in

only very obscure, but in our estimation, very injudicious. He says, "I have frequently told you, that in ordinary cases, you should not interfere too soon; but here is a kind of exception." Where you have a presentation of the shoulder and arm, and turning is obviously necessary, (is there any other method but turning, that can secure the delivery of the woman, and, at the same time, preserve the child? We know of no other; nor do we know what is meant, by "turning is obviously necessary"—for this is the only means; "yet this only means," must be regulated by correct principles, or the object of the operation, as regards the child, most certainly, and perhaps, the mother, will be defeated:) we are, therefore, surprised that Dr. B. should make an exception of "care and gentleness" in the case of arm presentation when both are so eminently required; and rather surprised at the following advice: "The sooner you operate, the better; for, if you delay, the womb may contract, and without using great force, the turning may be impracticable!!" Read carefully what we say in this Chapter in Arm Presentations.

* This belief is founded on what occurred during this attempt to turn; namely, a slight hemorrhage from the vagina; sickness, and vomiting; cold clammy sweat, &c.—of the pulse, I can say nothing; it was extinct when I saw the patient—the attendants, of course, could give no account of it, and the midwife was too much occupied by her operation to examine it.

about five minutes after I entered the room, and while the midwife was still exerting all her force upon the legs of the child. The persons present informed me, that the midwife, after she had learnt I had been sent for, declared it was unnecessary, as she "could deliver the woman as well as any body"—she, therefore, redoubled her exertions, to make good her assertion: the consequences I have just related. She most industriously laboured in this attempt, for more than an hour.

1410. The midwife told me, that "the arm had been down many hours, and the pains were very strong;" but added, "notwithstanding this, the child did not come nearer the world; I therefore determined to wait no longer, and proceeded to turn, as I had several times done in like cases. The mouth of the womb was close around the arm of the child; but I did not mind this; for I got first one finger in it, then another, and at last my whole hand. But indeed, doctor, this was hard work. When I got through, I never was so long finding the feet; but all my strength could not make them come down; and the poor woman died, because I did not begin sooner." I took this poor ignorant creature aside, and frankly told her, she had destroyed her patient; and exacted, on pain of exposing her, a solemn promise, that she would never attempt the like operation again.

1411. Therefore, when the mouth of the uterus strongly opposes the introduction of the hand, it should not be attempted; in such a case, it will almost always be found if the waters have been long drained off, that the tonic contraction of the body and fundus, will also offer much difficulty to turning. This being the situation of the patient, nothing can justify the attempt to turn; for one of the following consequences will almost certainly follow: 1st. If the hand be made to pass the stricture, it will be at the expense of so much injury to the neck of the uterus, that the one or other of the evils stated above will follow. 2d. If the hand be made to pass the constricting os uteri, the body and fundus will offer so much resistance, as to defeat the safe turning of the child; or, 3d. If the child be safely delivered, it may be at the expense of the life of the mother.

1412. It seems then to follow, that this condition of the os uteri, as well as of the body and fundus of this organ, must be changed before any attempt is made to bring down the feet of the child. With this in view, we must induce such a state of relaxation, as shall enable the hand to pass, and the turning to be performed, without the risks stated. This can be almost cer-

tainly effected, by a sufficient loss of blood. To exemplify the practice in such cases, I shall relate one, from my "Essay on the Means of lessening Pain," &c., in which this remedy was successfully employed.

1413. "1802, January 29th, Phœbe Hall, a black woman, in labour with her seventh child; arm presented, and down for several hours; arm considerably swollen, as the midwife had exerted considerable force upon it; the mouth of the uterus contracting closely round it. I got Dr. Carter, (a gentleman who accompanied me,) to introduce his hand into the vagina, and place a finger within the os uteri—this he did with some difficulty, as the uterus was very rigidly closed upon the arm. I tied up the patient's arm, to let her bleed until he should tell me the mouth of the uterus was sufficiently dilated. When I had drawn from forty to fifty ounces of blood, she became sick and faint; at this instant Dr. Carter cried out with rapture that the uterus was sufficiently dilated—upon my examining, I found it to be the case; the turning and delivery were soon accomplished."

1414. It must be observed, that such labours as are attended with fever always require the loss of considerably more blood than when none attends; and it has been found best, in such cases, to draw the blood at two or three operations; but carrying the last to faintness, or at least to sickness of stomach. Now, the labours in question are almost always accompanied by fever, if they have been long protracted; consequently, will frequently require the adoption of the plan just proposed.

Sect. II.—*Of the Situation of the Arm and Shoulder within the Pelvis.*

1415. The situation of the arm and shoulder within the pelvis, may be such as to render turning, if not impracticable, at least unsafe.

1416. The arm, to the very shoulder, may be protruded through the os externum; and the shoulder itself so impacted, and the contraction of the uterus so firm, as to render it impossible to turn, with any prospect of success to the child, or safety to the mother. Our conduct, in this situation of things, must be regulated altogether by the condition of the child; and this will be either living, or dead. It must therefore be ascertained in

which of these states it may be, before we decide on the mode of acting.

1417. With a view to determine this, the hand should be passed into the uterus until it reach the umbilical cord—if this pulsate, the child is of course living; if it do not pulsate, the child is certainly dead.

a. The Manner of Acting, if the Child be Living.

1418. Having ascertained the child to be living, our conduct should be such, as to give it the best possible chance to be delivered alive. The choice of means will lie between turning, and waiting for the spontaneous evolution of the child. As regards turning, it must not be disguised, that it is an operation of hazard to the child even under the most favourable circumstances of the uterus, or position of the child; and of course, the risk will be in proportion to the departure from these best conditions; yet it offers, in this case, almost the only alternative.

1419. In the situations of the parts in the presentation now under consideration, two difficulties will necessarily present themselves: 1st. The uterus will be found firmly contracted on the body of the child; so much so, sometimes, as to render it almost impracticable to turn; or, at least, it would be hazardous, unless the operation be very carefully conducted. In such a case, it should not be attempted but with the utmost caution, and not without previously endeavouring to diminish the resistance of the fundus and body of the uterus by free blood-letting, as just proposed, for the rigidity of the os uteri, when it creates a difficulty. After the patient has been liberally bled, the opposition to turning is sometimes so much diminished, as to render the operation not only practicable, but safe even to the child. Should the blood-letting procure no relaxation, the case becomes a forlorn one; especially for the child.

1420. We should not, however, for this reason, abandon the poor woman to her fate; for even under a severe contraction of the uterus, a well-directed gentle force will sometimes overcome difficulties, that at first appeared insurmountable; especially after a liberal dose of opium.* If the practitioner be inexperienced, he should, if possible, call to his aid a more skilled operator. He should never attempt to overcome by force, the difficulties which

* It will be borne in mind, that a free bleeding must be performed, before the opium is given.

oppose him; a proper exercise of patient address should ever govern in such cases, if he mean to succeed.

1421. Secondly. In consequence of the firm contraction of the uterus, the shoulder, *we are told*, is found so tightly wedged in the inferior strait, as sometimes not to permit the slightest motion upwards. I will not say, that this is never the case, but I must declare it seldom happens, unless the proper time for acting has been lost, either reprehensibly or unavoidably. So far, I have never met with a case, in which I could not turn, if turning were the desirable mode of acting: but this has arisen, perhaps, from having been generally able to watch the proper moment for the operation.*

1422. In these cases, the proper moment to act, is, so soon as the os uteri is sufficiently relaxed to permit the passage of the hand; and if this relaxation do not take place spontaneously, it should be procured as early as the nature of things will permit, by blood-letting and opium; and this as soon after the escape of the waters as practicable. If the case have been mismanaged, before a judicious practitioner has been consulted, he may not perhaps be able to terminate the labour by turning, with any prospect of success to the child; he is then to consult the interest of the mother alone; and this will perhaps be best advanced by waiting, so long as the child may continue to live.

1423. But should any accident complicate the labour, and render immediate delivery proper, he should try to relieve the patient by turning, though it offer but a bad chance for the preservation of the child. If this be impracticable, (a circumstance, I am warranted in saying, of rare occurrence,) he must relieve the mother at the expense of the child, as will be directed presently.

1424. The only other resource which presents itself for the preservation of the child, is waiting for what is termed the "spontaneous evolution of the child."

b. Of Spontaneous Evolution.

1425. Schneider was the first to notice this change in the presentation of the fœtus, but Dr. Denman was the first to notice

* I have made several admissions above, that would appear to contradict, what I here urge—the cause of these acknowledgments, is my respect for the experience, and opinions of others, though not borne out by my own practice. I say, also, that I would turn when turning was the desirable mode of operating—mean-

this remarkable resource of nature, in shoulder or arm presentations. He enriched the profession by his history of it, and by instructing the practitioner, that in some instances, nature achieves with even safety to the child, that which art could not have performed. His explanation of this phenomenon is highly ingenious, and was for a long time the received one; but it appears to have yielded to that of Dr. Douglass, even by the confession of Dr. Denman himself. See Dr. Douglass's Essay on Spontaneous Evolution. There is a case lately recorded, where the child was delivered by the right foot, by the unaided efforts of the uterus: it is thus related in the "Bulletin des Scien. Med." for July, 1830, page 95, from Siebold's Journal für Gebartzhülfe, etc. T. viii. 3d cap. p. 712.

Dr. Schneider was called to a woman on the 13th of July, 1822. He was informed, that the child had presented the arm, and that the delivery was effected by the powers of the uterus alone. The people present could not inform him how the thing happened; but the patient declared, that the waters were discharged by the first pains, and that an arm of the child immediately fell into the vagina. The woman instantly sent for help, but in a few minutes after, violent and almost insupportable pains came on, during which time the woman felt as if the whole abdomen was turned upside down, (bouleversé.) Very soon after the right foot of the child escaped, and then the trunk and head. The right arm of the child was livid and swollen, proving, that this part first presented itself. The child was of middling size, but dead. The pelvis of the woman was very large.

1426. This chance for the preservation of the child, is, however, of extremely rare occurrence; for in by far the greater number of instances of "spontaneous evolution," the child has been expelled dead. Indeed, the delivery of the woman by this change of position of the child, is in itself very rare. I have never seen a case. Yet the testimony on this point is conclusive, and will justify us in considering it a resource, after all the rational endeavours have failed, yet it must be evident the change sometimes so fortunate for both mother and child, can only reasonably be expected, when the child is small or the pelvis very ample.

1427. I say, a chance for the child; for such only should it be considered; for if the child be dead, we have no longer terms to

ing by this, that there are exceptions to this rule: see par. 1427; also, the article on turning in deformity of the pelvis.

keep with it; our attention must be solely directed to the safety of the mother. I should, therefore, recommend waiting for this "spontaneous evolution," whenever turning forbad the hope of saving the child, provided the labour be not complicated by either of the accidents enumerated, (651;) but if the child be dead, and this ascertained as directed,* (1417,) we should not wait for the uncertain event of "spontaneous evolution."

1428. Dr. Merriman has very properly observed, "the occurrence of the spontaneous evolution has been comparatively so rare, that no man would be justifiable in simply relying on it. The knowledge that it has sometimes happened, may, indeed, under some circumstances of extreme resistance to the passage of the hand into the uterus, reconcile us to the delay which I have recommended; but we should never allow it to operate upon our minds, so as to induce us to neglect the proper means, and proper time of turning, when we have it in our power. It is the duty of the accoucheur, on all occasions, to give nature every possible opportunity of exerting herself for the relief of the patient; but it is equally his duty, when nature becomes embarrassed and oppressed, to interpose the timely assistance of art; lest nature, being compelled to relinquish the task, the patient fall a sacrifice to the delay."†

c. Mode of Acting, if the Child be Dead.

1429. If it be ascertained that the child is dead, and it should be impracticable to turn, we must attempt the delivery of the child, by the use of instruments. The instruments necessary for this purpose, may be, the scissors, and crotchet, or simply the blunt hook. Before, however, either is employed, the uterus should be either dilated, or dilatable; and this will almost always be found to be the case, where the shoulder is forced down to the os externum.

1430. In this situation, we can always command the thorax or abdomen of the child; either of which may be penetrated by the scissors; and these aided by the crotchet, or blunt hook. It has been recommended by several, to bring down the head by pulling with a blunt hook fixed over the neck. It would seem, that this plan was first suggested by Celsus; it is, however, claimed

* It must be recollected, we can pass the hand to the umbilicus of the child, when it might be impracticable to turn.

† Synopsis.

for one Horne by Heister, as an original invention. When the shoulder has really been thrust without the os externum, *and the child certainly dead*, it may be become a question, which of the two propositions will be most easy to fulfil. Dr. Sims has successfully used the blunt hook upon the neck of the child in at least two cases: in one, the head was delivered without separating it from the neck; the other was attended by this separation. In both instances, the child had been dead a long time. I can say nothing from experience, on either of these modes; therefore, will not decide positively on their comparative merits: it nevertheless strikes me, that the one, which will be attended with the least risk of violence to the soft parts of the mother, should be preferred; and this appears to be the one, which will diminish the child's bulk before it is forcibly dragged from the mother's pelvis; therefore, perhaps, the scissors and crotchet, may be the safer method in this respect.

1431. It has been usual, it would seem, in cases where turning was impracticable, to wait for the "spontaneous evolution" to take place; but I would not recommend this plan, when it is certain the child is dead; and for these reasons: 1st. This "evolution is not certain to take place; 2d. If it do not, we certainly expose the woman to much suffering; and perhaps even to danger, for the hope of this favourable contingency, (1417.) The British practitioners being much more familiar with these untoward cases of arm presentations, do not hesitate to operate with cutting instruments upon the child. We will, therefore, give a part of Dr. Leed's mode of proceeding in such cases.

"On the 15th of October, 1824, I was called to visit a patient of the Westminister General Dispensary, residing in Great St. Andrew Street. I found her in the following condition. The membranes had been ruptured fourteen hours, and the *liquor amnii* had entirely escaped. The right arm, much swollen and livid, was protruding out of the external parts, and the shoulder and part of the thorax were firmly impacted in the pelvis, while the contractions of the uterus were violent and incessant. The pulse was quick, the face flushed, and the soft parts lining the pelvis were hot, dry and very tender. Thirty ounces of blood were drawn from the arm, and sixty drops of laudanum administered before any attempt was made to alter the position of the child. After waiting for half an hour, when the pains had somewhat diminished in violence, I attempted slowly to pass up my hand, but the pains were immediately renewed with redoubled

force; and after persevering for upwards of an hour to turn, I was compelled to abandon the intention. Another practitioner then saw her, when other twenty ounces of blood were drawn from the arm, and forty drops of laudanum were administered. He waited some time in the hope that the actions of the uterus would cease; but this not taking place, he proceeded to endeavour to pass up his hand into the womb. This attempt again excited the most violent bearing down pains, and after long and fruitless exertions, he was also compelled to desist from the threatened danger of rupture of the uterus.

"Two hours having elapsed after this second attempt to turn, and the pains still continuing undiminished, I separated the arm from the body at the shoulder joint, laid open the thorax by the means of the crotchet, and passing it through the opening thus made, fixed it on the lower part of the spine; and on dragging down with a steady force, the child passed out of the external parts doubled. Though there was great distention of the parts at the outlet of the pelvis, no laceration of these took place.

"The superior aperture of the pelvis having been considerably under the ordinary dimensions, some resistance was offered to the passage of the head; but this was overcome without much difficulty. The patient speedily recovered, and has since been delivered by me of an eight months' child, where the breech presented, and where the life of the child was lost, from the time and force required to bring the head through the confined brim of the pelvis.

"On the 1st May, 1827, I was requested to visit Mrs. Kagen, Charles's Street, Drury Lane, also a patient of the Westminster General Dispensary. She had been two days and nights in labour, and was extremely exhausted with fatigue. The left arm much swollen was presenting, and around it a loop of the umbilical cord, which did not pulsate. There was great thirst and restlessness, and the abdomen was tense and very painful on pressure. The pulse was extremely quick. The uterus was contracting with great force, and I found it quite impracticable to pass up the hand, or to push back the presenting part, so firmly was it impacted on the pelvis. Sixteen ounces of blood were drawn from the arm, and an opiate administered at 4 A. M. At 7 o'clock the pains had almost ceased, but were instantly renewed on attempting to turn. The child being dead, I did not persevere long in my efforts to turn, but delivered without much difficulty in the manner already described. Here, also, there was

contraction of the brim of the pelvis, of which a lamentable proof existed in a fistulous opening between the bladder and the vagina, reported to have been caused some years before by a protracted labour, which was terminated by the use of the forceps.

"On the 14th May, 1827, I was called to a patient of the same Institution, in King Street, Drury Lane. The left arm presented, and the shoulder and thorax were forced deeply into the pelvis. The umbilical cord was hanging without the external parts, and did not pulsate. The contractions of the uterus were strong, and were much increased on attempting to introduce the hand. The delivery was accomplished with the utmost ease, and in a very short time, as already described. The extraction of the child was effected very slowly, to allow of the dilatation of internal parts, and to prevent laceration of the perinæum. On the second day after delivery, this patient experienced a slight attack of abdominal inflammation, which readily yielded to one copious bleeding and cathartics.

"In another case which has since occurred to me, and which in all essential circumstances resembled the three now detailed, the same method of accomplishing delivery was adopted, and with similar success.

"I do not consider it necessary to define more clearly the cases to which the above practice ought to be applied, as it is hardly possible for any one, after the observations I have made, to misunderstand the object of this communication, or to suppose that the common operation of turning should be abandoned where there is a reasonable hope of saving the child's life, and that of the mother.

"The method of effecting delivery above mentioned, I was led to adopt, from reflecting what takes place in cases of spontaneous evolution of the fœtus; and it may be perceived, that in all the foregoing instances nature had begun, and was striving, though ineffectually, to complete this process.

"Since the occurrence of these cases, I have had an opportunity of perusing the essay of Dr. Douglass on this subject, and have been gratified to find he has recommended the same mode of treatment, and has been also forcibly impressed with the impropriety of turning in all cases of arm presentations. Dr. Sims, in the fortieth volume of the Medical and Physical Journal, stated similar views, but did not lay down any specific rule of practice in such embarrassing cases

"Dr. Davis, in his Elements of Operative Midwifery, p. 326, concludes some observations on this subject with the following words. 'If, therefore, we suppose the child to be already dead, or the circumstances of the labour to be such as to make it impracticable to bring it into the world alive by means of turning, or even to perform that important operation at all without exposing the mother to extreme danger, it would then, in my opinion, be the unquestionable duty of the practitioner to effect the delivery by embryotomy.'

"Instead of extracting the child double, he recommends 'that it should be divided into two principal parts, head and body, by passing a properly adapted cutting instrument across, and through the entire structure of the neck;' and he has delineated in his invaluable work instruments for this purpose.

"Notwithstanding, however, his ingenious invention of craniotomy forceps, and of the power which they confer upon us of extracting the head, or any other part of the child from the uterus, still I should be disposed to avoid, if possible, the occurrence of the head remaining in the cavity of the uterus after the extraction of the body, as it must be extremely difficult to find afterwards for perforation, and quite impossible to accommodate it to the diameters of the pelvis in passing.

"The difficulty of reaching the neck when the shoulder and thorax are thrust deep into the pelvis, and the head of the child is tilted up over its brim, appeared to me in the preceding cases so great as to be almost insuperable, setting aside the disagreeable process of passing up cutting instruments so high within the uterus." Dr. Ramsbotham describes this operation (of *Exvicera-tion* as he terms it, in the following words: "The woman lying on her left side; an assistant should be directed to bring the chest as fully into the pelvis, by traction at the arm, as possible; the perforating scissors, guided by two fingers of the left hand, should be carried against one of the intercostal spaces, and a free opening made. One or more ribs might be divided if necessary, so that two or three fingers, or the whole hand, might be introduced within the aperture.—Through this incision, the contents of the fœtal thorax must be extracted; the diaphragm may be perforated afterwards, and by the same opening the liver and intestines evacuated. The body, thus deprived of the principal part of its contents, will collapse, and if the uterus continue to act with vigour will be expelled double, the breech sweeping the sacrum and perinæum. But, should the pains have ceased, artificial extrac-

tion may be most beneficially made by means of the crotchet fixed within the fœtal ilium, the breech will soon be observed to descend, and the case will terminate as though nature had expelled the child unaided."

CHAPTER XXXVIII.

ON PRESENTATIONS, WITH THE FALLING DOWN OF THE UMBILICAL CORD.

1432. We have already expressed our surprise, that the cord does not more frequently accompany the presenting part, and by its presence embarrass the labour, than it is found to do. Yet a prolapsus of the cord is comparatively, and fortunately a case of rare occurrence.

1433. It will readily occur, that a labour complicated with the descent of the cord, can only be threatening to the child; since the cord being down cannot of itself interfere with the mechanism of a labour, or influence its duration; consequently, can offer no threat to the mother. It is then the safety of the child alone, that claims our attention, or that presents us with any specific indication; for on its welfare we must base all our rules of conduct. For, if the child be dead, and this can be determined by the want of pulsation in the cord, the funis being down, should not alone make us interfere with the labour. For Dr. Denman has very justly observed, "It is only when the child is living, that any interposition can be required, or be of service; yet it is remarkable that writers on this subject have instituted their directions in general terms with regard to the state of the child, whether living or dead."

1434. We may sometimes determine, that the cord will prolapse, even before the membranes have given way; for it may sometimes be felt, either single or in folds, immediately before the presenting part. Its peculiar form, and its pulsations, can be perceived behind the membranes in the absence of pain, if the finger be placed against them, and the os uteri be sufficiently open: and this at once decides the nature of the case. When this happens, it may be looked upon as an important warning, as it directs us to a peculiar observance in practice; but if it only declare itself after the rupture of the membranes, by falling into

the vagina, we necessarily lose the advantage, that a previous knowledge that this was about to take place, would give us.

1435. Some have attributed this accident to the uterus being unusually loaded with the liquor amnii; but we believe without sufficient reason; for we have seen most abundant flows of this fluid unattended by this accident; and we have certainly witnessed it, where the quantity was not uncommonly great. Others have ascribed it to an unusual length of cord; this is more probable, since, it is presumable, that this circumstance would increase the liability to the accident, though, perhaps, it may not be essential to it: we may at all events most safely affirm, that we have seen cords of great length, where this protrusion did not take place.

1436. Perhaps it may be truly said, that this event is altogether accidental, or contingent; though Dr. Denman declares that some women appear more liable to it than others: it would certainly be difficult, were this even the fact, to determine in what the predisposition consists, as it does not seem to depend upon either the quantity of liquor amnii or the length of the cord.

1437. I have said, that the circumstance of the cord preceding the presenting part of the child, is altogether, perhaps, accidental, or contingent. I believe this to be the case, from the difficulty of assigning the predisposing causes, as just observed, and the extreme rarity of the occurrence. I am of opinion, that when this happens, the following circumstances must take place: first, that the cord must be precipitated before the presenting part, and made to rest against the membranes: in this case, the prolapsing of the cord would be inevitable; and the cause of this situation of the cord, must be hidden, perhaps, in the same obscurity, as any other deviation in the presentation of the child itself. Secondly, that if the cord should not originally offer with the presenting part, then two circumstances must obtain, that the floating cord may be carried without the os uteri; and these appear to be, first a small, but powerful current instead of the diffused and feeble discharge of the liquor amnii; and secondly, that this current must meet in its course, a portion of the cord sufficiently long and disengaged, to be carried by it without the uterus. If it be asked, how can this partial current be established, and endowed, with an adequate power to produce the accident in question? I would answer, by the head or presenting part of the child occupying the superior strait so strictly, as to prevent

the escape of the waters, but from a small portion of that opening; and the force with which the liquor amnii shall escape, will necessarily be commensurate with the power with which it is urged; or, in other words, it will be driven with an impetus, equal to the force with which the uterus contracts.

1438. We need but insist, in confirmation of this conjecture, that the presenting part every now and then does so completely occupy the superior strait, as to dam the waters above it, and thus create difficulty and delay in the labour; hence the direction to raise the head, that the waters may escape.

1439. But a truce with conjecture; it is enough for all practical purposes, (since, did we know the cause, we could not prevent the effect,) that the cord does precede the presenting part; and that under two circumstances, as we have just stated. It is proper to observe however, that each condition in which the cord may prolapse, requires some difference of management.

1440. We will first notice the cases in which the presence of the cord is detected, before the waters have escaped.

1441. It almost supposes the os uteri to be opened to some extent, when we are able to detect the presentation of the cord, since it requires some space to ascertain satisfactorily its presence; at least with sufficient certainty to make us determine on one mode of proceeding, in preference to another.

1442. We are directed in such cases, both by Dr. Denman and Mr. Burns, if the cord prolapse, and the os uteri be but little opened, rather to wait the issue of the natural progress of the labour, than to forcibly enter the uterus: in this, we perfectly agree. But Mr. Burns, immediately after advises, "as soon as the os uteri will admit the introduction of the hand, the child should be turned, if it can be easily done." And Dr. Denman seems inclined to the same mode of treatment, though a little more precise, and more guarded upon this subject than Mr. Burns; but both are advocates, under certain restrictions, for turning.

1443. Mr. Burns declares the sum of practice in this case to be, 1st, that "when the os uteri is not dilated, so as to permit turning, we must not attempt it; but when turning is practicable, it is to be performed; 2dly, when the head has descended into the pelvis, the cord is to be replaced; 3dly, or secured as much as possible from pressure; 4thly, but if the circulation be impeded, the woman must be encouraged to accelerate the labour by bearing down, or instruments must be employed; 5thly, when

the presentation is preternatural, these directions are to be attended to, and the practice is also to be regulated by the general rules applicable to such labours."

1444. We shall examine each of these directions in order, and, 1st, that "when the os uteri is not dilated, so as to permit of turning, we must not attempt it; when turning is practicable, it is to be performed." Dr. Denman more cautiously advises, "if the child be living, and the presenting part high up in the pelvis, especially if the pains have been slow and feeble, it will generally be better to pass the hand into the uterus, to turn and deliver the child by the feet; using, at the same time, the precaution of carrying up the descended funis, that it may be out of the way of compression." But, notwithstanding these positive directions, I am inclined to think that the question to be solved in such cases is, 1st, whether it be ever proper to turn for the mere presence of the cord; and, 2dly, if it be, what are the circumstances which render it so?

1445. Turning must always be looked upon as of doubtful safety to the child, (736;) its adoption must, therefore, be constantly regarded as a choice of evils. In a case of prolapsed funis, it should be resorted to with great caution, especially as there is no question that children are frequently born alive after the cord has been prolapsed, and when the progress and termination of the labour was confided to the natural powers. While, on the contrary, the fact is equally well established, that they have perished during the extraction; and, I believe, we may safely say with Baudelocque, "and all this, in cases where they might have been born alive, notwithstanding the exit of the cord, had the delivery been left to nature."

1446. "For," adds he, "after the discharge of the waters which brought it (the cord) out, the expulsion of the child is often quicker than its extraction could be;" therefore, "we should, in all such cases, add a long compression of the cord, to the danger sometimes inseparable from turning the child, and bringing it by the feet."

1447. Now, as it is admitted, that children have been born alive, when nature has not been interfered with, though the funis had presented, it follows, that this part, in such cases, does not necessarily suffer compression; consequently, turning, as a general practice, should not be inculcated, especially as we can often avert this dreaded pressure, by carrying the cord to that side of

the pelvis to which it may most incline; or by restoring the funis within the uterus, beyond the risk of this accident.

1448. Turning can only be considered as the better means, when no farther reliance can be placed on the powers of nature to effect the delivery in proper time; or when the cord suffers either constant or occasional depression; either of which, if continued beyond a certain time, will inevitably destroy the child. It is not sufficient, because the pains are feeble and long in returning, to make us conclude that the powers of nature are incompetent to the end, and make us resort to the doubtful expedient of turning; for, unless the cord be threatened with compression at the same time, the mere tardiness of labour, especially at the earlier part of it, offers no immediate indication.

1449. For we may, in many cases, urge the reluctant powers of the uterus to proper and efficient action, or restore them when they have flagged from exhaustion. The first, is sometimes successfully accomplished by bleeding, a stimulating injection, or by opium; the latter, oftentimes most happily, by the secale cornutum.

1450. It may, however, be necessary to turn, or otherwise treat this case, if it be complicated by other accident; but the propriety and nature of the choice, must be governed by the nature and force of the additional complaint. Or it may become absolutely necessary to turn, if the presentation be preternatural, agreeably to our acceptation of the term, (615;) and often, highly expedient, at least to interfere with the regular course of the labour, when either the breech, feet, or knees, shall offer. Thus, if the breech, feet, or knees present, it may become necessary, for the preservation of the child, to bring down the feet, and finish the labour by artificial aid.

1451. It should, however, constantly be borne in mind that even when we determine on this operation, it should be subject to all the regulations we have already imposed upon it. See Chapter "On Turning."

1452. When we have ascertained, that the funis is below the presenting part, I would depart from the rule I have laid down, (544,) of rupturing the membranes: I would, in this case, preserve them with the most scrupulous care, by not "touching," by strict rest on the part of the patient; and cautioning her against bearing down. By these means we may prevent the yielding of the membranes until the last period of labour; and

of course, prevent the compression of the cord. I do not know that this plan has hitherto been recommended; though so obviously important, when it can be complied with. I can, however, only speak of its utility, in a single case. I ascertained in the early part of a certain labour, that the cord was presenting; and made up my mind not even to touch my patient until the pains should declare the last period to be at hand. Upon examination, at the time I thought proper, I found the membranes ready to protrude the os externum; and in which, I could distinctly feel the prolapsed and pulsating funis. The head of the child was about to emerge from under the pubes; and the soft parts pliant, and every way disposed to yield. I now ruptured the membranes, and the head and body almost immediately followed the discharge of the waters. The child was healthy, and cried lustily.

1453. I do not wish more consequence to attach to this plan than it deserves; for I must confess it is no direct evidence, that the safety of the child depended upon maintaining the integrity of the membranes to so late a period; as we know that the same happy results have followed delivery in cases of the falling of the cord without this precaution having been observed. Yet, one thing is nearly certain; that the funis cannot be either very long, or very severely compressed, so long as it is retained within the entire membranes. This plan would be particularly important with a first child; or where the uterus opens reluctantly; or where the labour progressed slowly, and the external parts offer much resistance. It must, however, be granted, that it cannot always be carried into execution, as there are several causes which may rupture the membranes, besides design; yet, nevertheless, when it can be done, we think it should be done.

1454. 2d. "When the head has descended into the pelvis," says Mr. Burns, "the cord is to be replaced, or secured as much as possible against pressure; but if the circulation be *impeded*, the woman must be encouraged to accelerate the labour by bearing down, or *instruments* must be employed."

1455. This rule necessarily divides itself into several very important, ill-defined directions; it will, therefore, be necessary to its investigation, that we consider them separately.

1456. First. "When the head has descended into the pelvis, the cord is to be replaced." This direction has always been a great desideratum in the treatment of labours complicated by the presence of the cord, and various plans have been suggested

by several ingenious and experienced members of the profession, neither of which, however, has been very successful. The crutch of Burton, the leathern purse of Mackensie, the attempt at its suspension of Croft, have been alike unrewarded by success.

1457. A more plausible method has lately been suggested by Dr. Dudan, which, he says, has been crowned with success in the instance in which it was tried. He proposes "to carry the prolapsed portion of the funis into the uterus by means of a gum elastic male catheter and ligature, in the manner following:—The catheter should be of the size of No. 8 or 9, with its stilet; a piece of narrow riband, or several thicknesses of strong thread of sufficient length, well waxed, must be introduced into the last eye of the catheter, and retained there by the extremity of the stilet. The cord must now be attached by the riband encircling it, without drawing it too tight. If the loop of the cord be short, or not more than seven or eight inches, it may be tied in the middle; but if longer, it should be doubled, and tied towards the centre of the fold.

1458. "The cord must be returned within the uterus at one of the sides of the pelvis: if it be carried to the right side, the right hand should be used; if to the left, the left hand, making the opposite hand serve as the guide to pass it between the head of the child and the neck of the uterus. As soon as the loop is found to penetrate between the head and uterus, it should be pushed with considerable force, and without our having fears, we may stop the circulation within the cord; or, should it be interrupted for a short time, it is of no consequence. At the same time, with the hand which serves as a guide, we may assist the passage of the cord within the uterus, and at the same time prevent its slipping in the loop of the riband.

1459. "When the cord is returned, we need be in no haste to withdraw the catheter: on the contrary, we should wait until the pains have made the head of the child engage in the superior strait; when it acts, if it may be so expressed, as a cork. Then the stilet must be withdrawn, and the catheter can easily be made to follow. The riband may remain, as it will be expelled with the child."

1460. This project I believe to be better than any other hitherto-proposed, as it gives more entire command of the prolapsed cord, and by a means which cannot injure either mother or child. This plan so nearly resembles one I proposed some

years ago, that they might well pass for the same. But that of Dr. Dudan is in one respect a considerable improvement on that of mine, by substituting the flexible male catheter for a piece of plain steel of proper size, with an eye to it, as I had proposed; while that of mine has perhaps an advantage in the mode of applying the riband, or ligature.

1461. In Dr. Dudan's plan, which, by the by, he describes very ill, the riband is tied over the cord with sufficient tightness, and the ends are passed through the eye of the catheter, and fastened within the canal by pushing up the stilet; while, in my method, the riband is passed round the cord without tying; the ends are then passed through the eyes by withdrawing the stilet sufficiently to leave them clear; the extremities of the riband are then drawn sufficiently tight to place the cord and catheter in contact. The advantage of this method is, that we can always regulate the degree of compression upon the cord; or we may take it off altogether if desirable; whereas in the other it must always remain the same.

1462. As these plans are rather difficult to comprehend from description, I have added drawings by way of illustration. It will be seen that I have availed myself of Dr. Dudan's suggestion of the flexible catheter. See plate XVII., and explanation. But to proceed.

1463. 3d. "Or secured as much as possible from compression:" to do this, we are directed by almost all the writers upon this subject, to carry the cord to one of the sides of the pelvis, and the side nearest to the prolapsed portion is always the best. We can sometimes succeed for a time in preventing the compression of the cord by this plan, but it will be readily understood that this cannot be permanent; as the head, in changing its position to place itself under the arch of the pubes, will press upon it with more or less force and certainty. The child will now be in great jeopardy, and if not very speedily delivered will die. The woman should be solicited to aid herself as much as possible, or the ergot should be given, with a view to hasten the labour.

1464. 4th. "But if the circulation be *impeded*, the woman must be encouraged to accelerate the labour by bearing down, or *instruments* must be employed."

1465. This direction is more vague, perhaps, than any of the preceding; it runs counter in its tendency, if literally interpreted, to the advice of the most respectable authorities upon this

subject; for if the circulation be arrested, the child will certainly die in the course of a very few minutes; and if the circulation have been stopped sufficiently long to cause the death of the child, it is agreed upon all hands, and even by Mr. B. himself, the labour should not be meddled with, as it would be unavailing to do so; consequently, the woman need not be urged to unusual exertion, nor should instruments, or any other artificial means be thought of.

1466. It is by no means uncommon for the life of the child to be *threatened* in a case of the prolapsus of the cord, when the head is low in the pelvis; as there is a constant liability to its being placed between the head and the pelvis, and thus suffer more or less compression: we have already provided for this condition, (1449,) when delivery can be performed in time to save the child, by the exertion of the woman, or by increasing the power of the uterus by the exhibition of the "ergot:" or if the forceps can be commanded in time, they may sometimes be advantageously employed.

1467. Now, Mr. Burns vaguely prescribes the use of "*instruments;*" the choice of a proper one might embarrass a young practitioner; though we are disposed to admit that Mr. B. would select for his own use, either the forceps or the vectis, for he had just said so; as the object unquestionably should be to save the child's life; but this should surely have been again designated, especially as he is now *posting* up the points of practice. Moreover, it appears to give contradiction to the cautions and distinctions he had just made before, and thus sets him against himself. For, just above, he states: "If this be not practicable," (returning the cord,) "and the pulsation suffer, or the circulation be endangered, we must accelerate the labour by the forceps. If the pulsation be stopped, and the child dead when we examine, then labour may be allowed to go on, without paying any attention to the cord," p. 404. Yet, a few lines below, we find the ambiguous directions we have just quoted. Dr. Denman is much more precise upon this subject; he observes, that "when the head of the child presents, and has advanced far into the pelvis, if the pains be slow, and ineffectual, *and the child living*, it may be considered whether, without hazard to the mother, we may not employ the forceps or vectis; and *by extracting the head sooner than there was reason to think it would be expelled by natural pains, preserve the child.*" I have italicized parts of Dr. D's. directions, with a view to point out the important omissions in those of Mr. Burns.

1468. I would, without hesitation, have recourse to turning, under the circumstances just stated, and the ergot had failed, (1449;) or, if the forceps were not at hand, or within timely reach, rather than supinely see the child perish; unless, let it be observed, the waters had been so long drained off, and the uterus so firmly contracted as to hold out no prospect of success, or unless the head of the child had escaped from the mouth of the uterus: I would disregard the head being at the inferior strait, provided it was still enclosed in the uterus; the waters not too long expended; and the head easily moveable in the pelvis. For I agree perfectly with Dr. Denman, it is sometimes best to go beyond the common rules of art, if we can save the child by doing so.

1469. 5th. "When the presentation is preternatural, (that is, agreeably to Mr. Burns, when any other part than the head presents,) these directions are to be attended to, and the practice is also to be regulated by the general rules applicable to such labours."

1470. I have stated that the woman may be delivered without assistance, when either the head, breech, feet, or knees present; but confessed, however, that the head is certainly the most favourable of these presentations. I have laid down rules for the management of each of these varieties of labour, when they are, and when they are not, complicated by accidents, which must constantly be kept in view in the management of the case in which the cord has prolapsed, of which we are now speaking. Mr. Burns' last direction contains just principles, and are worthy of attention: they would have been still more useful, had he followed the plan of Dr. Denman, by specifying the particular treatment of preternatural labours, accompanied by a falling of the cord.

1471. Dr. Denman says, "When there is a descent of the funis, with a preternatural presentation of the child, our conduct must have regard to both these circumstances.

1472. "Should the breech present, the case will very much resemble the presentation of the head; that is, the same methods for replacing the cord may be tried, and with rather a better chance of success. If these fail, instead of considering the labour as one of those which is to be resigned to the natural efforts, it may be expedient at a proper time to bring down one or both of the inferior extremities, taking care that the funis be not entangled between the legs of the infant.

1473. "Should the arm present, and such presentation be complicated with a descent of the funis, very little difference of conduct will be required; because, in the first place, we should determine to turn the child, and deliver by the feet, and the additional circumstance of the descended funis can require nothing more to be done. Yet when the feet of the child are brought down, if the pulsation of the funis be lively or perceptible, it may sometimes admit of a debate whether it will be most proper to hasten the delivery, especially if the os uteri be not sufficiently open, or to leave it to be expelled by the returning pains. In either case it will, however, be right to attempt to return the funis within the uterus, and if it be in our power, out of the way of compression."

1474. Though the above directions are perfectly clear, and well understood by the experienced practitioner, they are far from being sufficiently explicit to the student or the young practitioner. I would cite, as an instance of the deficiency of precision, the expression, "it may be expedient at a proper time to bring down one or both of the inferior extremities." How would the unskilled know when the proper time for bringing down the feet had arrived? For the measure must be either useful or worthless: if useful, the uninformed should be instructed what constituted the proper time, that advantage might be taken of it; if worthless, it should not have been named, as it might create embarrassment. We will endeavour to supply the deficiency of Dr. Denman by stating, that the proper time for bringing down the feet when the breech presents, especially when complicated by the falling of the funis is,

1st. When the uterus is well dilated, and the external parts well disposed to relax.

2d. When the breech does not descend with sufficient rapidity, to give promise that the cord should not be long compressed.

3d. When the breech is ill-situated as regards the pelvis, (860,) or when it does not readily engage in the superior strait.

4th. When the cord is likely to suffer, or is actually suffering compression, and the child's life threatened, if not speedily relieved.

5th. When there is a deficiency or the absence of adequate pains.

1475. As another instance, we may produce the caution, "taking care, (in bringing down the extremities, that the funis be not entangled between the legs of the infant." In suggesting this

caution, Dr. D. shows himself thoroughly well acquainted with the contingencies of the operation of bringing down the feet; a contingency that has too often defeated the object of interfering with the labour, but he neglected to inform the inexperienced practitioner how this is to be avoided. He should have informed his readers, that the cord would most probably descend on one of the sides of the pelvis; and (almost) consequently, would be found either on the fore or hind part of the child. If on the fore part, the cord should be carefully carried up with the hand that is in search of the feet, and when these are found, the cord should, if possible, be made to pass over them, and made to lie above the legs, and upon the belly of the child, which will certainly prevent its getting between these extremities.

1476. If it descend on the back part of the child, it should be returned, above the brim of the pelvis, by the hand not to be employed for bringing down the feet: this will entirely remove it from the risk of its becoming entangled between the legs. (See rules for bringing down the feet in the breech presentations, 892, et seq.)

1477. If it descend on the anterior, or posterior portion of the pelvis, the cord should be removed to one of the sides of the pelvis; and, when practicable, to that side to which the back answers.

1478. If it should be found to descend between the legs of the child, the feet must not be brought down, until the cord has been slipped over one of the legs.

1479. If it be judged proper to use the forceps, their employment must be subject to the rules which govern their application; always, however, being certain, that the cord is not interposed between the blade of the instrument, and the head of the child.

CHAPTER XXXIX.

OF THE RUPTURE OF THE UTERUS.

1480. During labour the uterus every now and then is ruptured; and, perhaps, even oftener than at present we dare assert —sometimes this accident is concealed, from ignorance; and, at others, from design: hence, many cases must occur of which the

profession remains uninformed. Nothing can justify the concealment of this event, though we can promise ourselves but little by the avowal; but it is a duty we owe the connexions of the unfortunate woman, as well as the profession itself. Concealment often arises from a previously adopted theory upon this subject; and the supposed risk of professional reputation; than which nothing can be more disengenuous, or hypothetical. I would, in one word, recommend, in all such cases, its most speedy avowal, to those immediately concerned in the event; and must declare, I should consider the contrary conduct as highly derogatory to the honourable feelings which every medical practitioner should possess; as well as doing serious injury to the advancement of obstetrical knowledge.

1481. In treating this subject, I shall, first, consider whether it be proper to attempt any thing for the woman's relief, as there is much authority against it; and because it is constantly made the plea for the concealment of this accident; secondly, I shall take into view the variously reputed causes of it, with their mode of action; thirdly, detail the symptoms and consequences of the rupture; and fourthly, indicate the mode of proceeding, under the various circumstances with which the accident may be complicated.

1482. Dr. Hunter considered any attempt to relieve a woman who had suffered a rupture of the uterus, as cruel—therefore it was not to be attempted. This opinion was afterwards more strongly enforced by the late Dr. Denman, who declared, that "when the uterus is ruptured at the time of labour, both reason and experience show, that the patient has a better chance of recovering, by resigning the case to the natural efforts of the constitution, than by any operation, or interposition of art."

1483. I consider the assertion of Dr. Denman to be in opposition both to "reason and experience:" to reason, because it would be a natural suggestion, that that woman's chance would be best, from whom many of the causes were removed, that would hinder recovery, by the delivery of the child, &c.; and to experience, because we have the most unequivocal proofs of recovery, upon record where "the interposition of art" was resorted to.

1484. Thus, Heister,* Douglass,† Hamilton,‡ Ross,§ Kite,‖

* Instit. de Chir. tom. II. p. 137.
† Essay on Rupture of the Uterus, p. 7.
‡ Outlines, p. 344. MS. Lectures.
§ Annals of Med. Vol. III. p. 377.
‖ Mem. Med. Soc. Vol. IV. p. 253.

Madame La Chapelle,* relate cases of entire recovery after the delivery of the child, through the natural passages; while Hamilton,† Thibault,‡ Lambron,§ &c., give others of equal success, where gastrotomy had been performed. In all of these, however, the success was confined to the mother; the child, was uniformly dead: but I have strong reason to believe, that this was very much owing to the delay which took place before the operation was performed. Indeed, Burton‖ renders this almost certain, by the relation of a case which fell under his notice: in this, the child was delivered alive, though the mother died; while Mr. Haden relates an instance of the preservation of both mother and child.¶

1485. Thus, we can most successfully destroy Dr. Denman's celebrated aphorism on the subject of the rupture of the uterus, by producing cases, in which the "interposition of art" was followed by success. This, I think, should put the matter to rest; especially as there is no instance extant, at least with which I am acquainted, where the woman recovered at the full period of utero-gestation, when the child was permitted to remain undelivered.

1486. There are a number of instances upon record, purporting to be recoveries, after the rupture of the uterus, where the fœtus was permitted to remain in the abdomen—but they are liable to strong suspicion, and are far from standing the test of rigorous examination: they appear to be cases of extra-uterine conceptions, chiefly; or of but the partial rupture of the uterus. By partial rupture, *I mean, where the muscular substance of this organ has suffered laceration, but where the wound does not pass through its peritoneal coat.* Of this kind, are the cases related by a writer in the Jour. de Med. for 1780, also

* Annuaire Med. Chir. tom. I. p. 542.

† MS. Lectures.

‡ Jour. de Med. for 1768.

§ Baudelocque, Vol. III. p. 430.

‖ Syst. of Mid. § 43, p. 110.

¶ Dr. Davis relates a case of the rupture of the anterior portion of the uterus from which the patient recovered in about six weeks. In this case, the child was delivered by the craniotomy forceps, after having its head opened by Smellie's scissors. The neck of the bladder was so severely wounded, from its connexion with the portion of the uterus injured, as to prevent her retaining her urine ever after. This case, though unfortunate as regards the last named injury, is nevertheless a case in point, to show that the woman may recover after the uterus has been lacerated.

those of Drs. Bell and Sims.* Dissection proved, in several of these cases, that the peritonæum suffered only from distention. Mr. Dunn relates a case of rupture of the uterus, where the child was delivered per vias naturales. The patient was several times alarmingly ill after her delivery, but recovered eventually; and he delivered her of three children after, between the summer of 1830, and Feb. 1833.—(*Edin. Med. and Sur. Jour. for July*, 1833, *p.* 72.)—This case is one of the most remarkable of its kind upon record, and completely justifies the attempt to deliver in ruptures of the uterus. It perfectly enforces the opinion expressed by Dr. Denman's remarks upon the case of his very worthy, able, and experienced friend, Dr. Douglass, and completely settles the propriety of the immediate interference of the accoucheur, in all cases where the chance of instant delivery can be accomplished. And from all that I can learn from others, or my own experience, I cannot see any reason for withholding aid from the afflicted woman, who may have suffered this calamity—except, indeed, in that forlorn condition of the patient, where she would die before aid could be given. But what can we promise ourselves, by not attempting delivery? for I must again repeat, that there is no instance of recovery, at full time, from a rupture of the uterus, where the fœtus was permitted to remain in the abdomen of the mother—nor should the opinions of Dr. Hunter, Dr. Denman, and Mr. Burns, be considered sufficient authority, in such cases, to screen from reprehension any one who may have neglected an opportunity to discharge what I consider his bounden duty, by delivering his patient instantly, if practicable, when she has suffered a laceration of the uterus.

1487. Indeed, the objections of Dr. Denman, are not entitled to the smallest weight upon this point; since he is entirely at variance with himself. In his "Introduction to Midwifery,"† he appears to have entertained rational and liberal views upon this subject; he there tells us, that, "beside some few others, (cases of rupture,) of which I have been informed, or which are recorded, a case has occurred to my very *worthy, able, and experienced friend, Dr. Andrew Douglass,* in which the uterus was ruptured: he turned the child, the patient recovered, and had afterwards children." And Dr. Denman observes upon this case, "If no other case had ever occurred, I apprehend this

* See Essays on Subjects connected with Midwifery, where this subject is treated at large, (p. 201.)

† Vol. II. p. 117.

would be sufficient authority to render it, in future, the indispensable duty of every practitioner to act in a similar manner; and bad as the chance is of the patient, to be strenuous in using all the means which art dictates to extricate her, if possible, from danger, or to preserve the child."

1488. Dr. Denman has by no means satisfied me, or, perhaps, any one, why his sentiments underwent a change upon this subject; and the more especially, as it is a change to be considered as unfriendly to the cause of science, and to the interests of humanity—it seems he has drawn a conclusion upon this point, that satisfied himself; though totally gratuitous, in the estimation of every body else; namely, that "there are more instances upon record of recoveries of women who have not been delivered, than those who have been delivered after rupture of the uterus."

1489. Were this position of Dr. Denman really founded in fact, it would deserve the most serious consideration; but as strong doubts must be entertained upon this point, it has not changed my opinion: first, because the subjects of comparison are not equal; as very many more women have been suffered to remain undelivered after rupture, than have been delivered; consequently, a conclusion cannot legitimately be drawn; as the proportions they bear to each other cannot be known; secondly, because I deny that there is a well-attested instance of the woman's recovery, when she was permitted to remain undelivered.

1490. From all I can collect from the histories of cases of ruptured uteri, it would appear, that life is prolonged and suffering abated, by delivery;* it, therefore, involves a great moral question; and if the facts be as I have stated, and as I most seriously believe them to be, it must resolve itself into inculcating it as an obligation, that we deliver, whenever practicable; after the uterus has suffered laceration.

1491. Upon a comparison of an equal number of cases delivered after rupture, with those not delivered, it was found, that the women who were delivered, lived much longer on the average, than those who were not delivered: now, if death can be suspended by our efforts, even for a short time, it will follow, it becomes a duty to make them; and, if we add to this, what we have very confidently asserted, that there is no instance of reco-

* See Essays on various Subjects connected with Midwifery, by the author, p. 227.

very where delivery has not been performed, this first part of my inquiry must be terminated by declaring, it is almost always proper to interpose art, in cases of ruptured uteri.

1492. Very many causes are assigned for the rupture of the uterus; some of which appear totally incompetent to this end; while others of powerful agency, are but slightly glanced at. La Motte believed that the struggles of the child were capable of this accident; hence, by him, they are enumerated as a cause. In this he has been followed by Leveret and Crantz—indeed, I may say some late writers. But the child is almost always passive when the accident happens;* and I may add, in proof of this, that the uterus has given way, after the death of the child.

1493. Dr. Denman† says, "the uterus may, independently of disease, be mechanically worn through in long and severe labours, by pressure and attrition between the head of the child, and the projecting bones of a distorted pelvis, especially if they be drawn into points or a sharp edge." To this doctrine I cannot subscribe; first, because, before the membranes are ruptured, the head cannot rest with sufficient firmness against any given point to produce the necessary degree of "attrition;" secondly, that after the evacuation of the waters, the body of the child is so firmly embraced by the contracting uterus, that "attrition" cannot take place; thirdly, there could not be sufficient friction generated between the smooth surfaces of the child's head and the uterus to produce it; fourthly, in such cases the child's head should also exhibit marks of this "attrition," yet of this no mention is ever made.

1494. Salmathus, agreeably to Mr. Burns, considers a "thinness" of the uterus as a predisposing cause of rupture—but we have no evidence in any case whatever of this "thinness" existing as an original conformation of the uterus before the rupture takes place—if it be found thin, (post mortem,) it may be occasioned from mere exhaustion of blood, and not be an original condition of this organ. Mental agitation and frights are also said to occasion rupture of the uterus; but strong doubts should be entertained of such causes.

1495. I shall, therefore, pass without notice many causes reputed as capable of causing this accident; and consider only such, of whose agency no reasonable doubts can be entertained. I shall divide these, first, into those which act directly upon the uterus; nd secondly, into those which have an indirect influence.

* Baudelocque.

† Introduction, p. 105.

1496. The first may be considered mechanical violences, and may be both external and internal. The external may be blows, kicks, or violent pressure; the internal may be, ill-conducted attempts to turn the child; the attempt to return a prolapsed limb; the mal-adroit use of instruments; or the unequal surface of the child itself.

1497. The second, or indirect, are such causes as may have a tendency to injure the continuity of the uterus, by mechanically impeding the passage of the child; as a contracted pelvis; an unusual sharpness in the linea ilio-pectinea; exostoses, tumours, scirrhi, and ulcers.

1498. The action of these two sets of causes are different: the first act directly, by exerting a force beyond the resisting power of the uterus; the second, by diminishing the strength of a *particular portion* of this viscus, so that its own contraction may be sufficient to overcome the resistance which this weakened part offers.

1499. The mode in which the first set of causes acts, is sufficiently obvious without farther explanation. The second is not so clear, yet of most easy explanation. The head of the child, covered by the uterus on all sides, cannot, in a contracted pelvis, readily engage in the opening of the superior strait; it must, therefore, rest for a long time stationary, or nearly so, at its margin—if this be sharp, or projecting, the uterus will suffer in proportion to the weight of the child, the force of the contractions of the uterus, and the period it may suffer this compression—inflammation ensues; and, if the cause be not soon removed, gangrene will follow: when the uterus is thus weakened, it will be easily understood how a small force may rupture it.

1500. The second set of causes acts by preventing a regular development of the different portions of the uterus during pregnancy; consequently, one portion or other is put unduly upon the stretch, and of course weakened; and by its remaining passive during labour, by being diseased, it cannot resist the efforts of the healthy portions. When the action of the uterus itself is the cause of the rupture, it always takes place at the moment of the greatest severity of pain. Boer and other German pathologists, have rendered it probable, that that peculiar condition of the uterus called "Softening," may be a cause of the rupture of this organ; for though it is never perhaps absolutely until after death, yet it is rendered probable that it may exist during pregnancy, though perhaps in an inferior degree to what is observed in post

mortem examinations, yet to a sufficient extent to cause rupture during labour; and this may also, agreeably to the same authority, be the cause of the death of the fœtus in the last period of utero-gestation.

1501. Rupture may happen to any portion of the uterus; or in any direction; or at its connexion with the vagina—it may be more or less extensive; and the child with its appurtenances may pass entirely, or partially, into the abdominal cavity.

1502. When this accident happens, it almost always declares itself by such symptoms as cannot well be mistaken. I shall now consider those symptoms, under the third division of our subject.

1503. Crantz, Levret, and others, have supposed that the rupture of the uterus might be foretold by premonitory symptoms; but I am very certain that few things can be more equivocal than the symptoms pointed out by Crantz; namely, that, "when a woman is threatened with a rupture of the uterus in a laborious labour, the belly is very prominent and tight; the vagina lengthened, and the orifice of the uterus very high; the pains are strong, leave little interval, and do not advance delivery." I have seen all these symtoms in their most exalted form, without the labour terminating by rupture; and in Mrs. M's. case, which fell under my notice, and of which I have given a detail,* "strong pain with little interval" were not among its precursors; though a very extensive laceration of the uterus took place. M. Levret has added to these symptoms, but without increasing their certainty, "that the pain the woman suffers, is always seated towards the middle of the epigastric region; that a last effort, or violent leap, succeeds to the repeated strugglings of the child, which announces its death and the rupture of the uterus."

1504. Did the signs just detailed, portend a rupture of the uterus, every laborious labour would be threatened with one—every symptom enumerated above, is almost the necessary effect of the tonic action of the uterus, after the evacuation of the waters; yet fortunately for suffering woman, this accident is of comparatively rare occurrence.

1505. The signs added by Levret are frequently witnessed, without a rupture supervening: and it has occurred, where these marks were absent—it is also well known, that the uterus has

* See Essays on various Subjects connected with Midwifery, by the Author, p. 238.

given way after the death of the child;* I, therefore, perfectly agree with Baudelocque, that "the rupture of the uterus has often taken place without being preceded by any of them, and has not happened in other cases where their union declared it inevitable." The conclusion from this must be, that it would be extremely hazardous to act upon the presumption, that a rupture of the uterus was about to take place, because of the presence of several of the symptoms just mentioned—who could justify the employment of the forceps, or crotchet, or perform the difficult and oftentimes dangerous operation of turning, upon a mere surmise that this accident might take place?

1506. I have said enough, I trust, upon the uncertainty of any sign or signs that would announce a rupture to be at hand; I shall, therefore, pass to the enumeration of the symptoms which declare it, after it has taken place:

1507. The woman feels, for the most part, an acute pain at the place at which the rent happened—she generally cries out, and declares that something terrible has happened within her—the rupture is said sometimes to be accompanied by a noise which has been distinguished by the by-standers—a discharge of blood of greater or less extent takes place from the vagina—her face becomes cold and pale—her respiration hurried—she is sick at stomach, and most frequently vomits—the matter discharged is sometimes the common contents of the stomach, at other times it consists of a very dark, even black-coloured substance, resembling coffee-grounds—the pulse is extremely frequent, small, fluttering, or extinct—she complains of a mist before her eyes, loss of sight, and extreme faintness—a cold clammy sweat bedews the surface of the whole body, and if not speedily relieved, convulsions and death follow.

1508. These symptoms are, however, modified by several circumstances: 1st, whether it be the uterus itself, or its connexion with the vagina, that may be ruptured; 2dly, whether the child has escaped in part or entirely into the cavity of the abdomen; 3dly, whether the lesion has passed through the substance of the uterus alone, or has penetrated the peritonæum.

1509. 1. When the rupture has taken place either in the body or neck of the uterus, the pains either cease, or slacken so much as not to propel the child if it be still retained within the uterus.

1510. 2. When the child escapes entirely into the cavity of

* Annals of Med. Vol. III. p. 293, 303.

the abdomen, through the torn uterus, the most distressing and alarming symptoms quickly follow—if but partially protruded, pain may effect the delivery of the child, or it may be extracted by art.

1511. 3. Should the wound stop at the peritoneal covering of the uterus, and not penetrate the abdomen, there is reason to believe that the symptoms will not only be milder, but the chance of recovery increased.

1512. However strongly and decidedly marked the symptoms which accompany rupture may be, they are not exclusively to be relied on—but when they have excited suspicion, by their severity and character, we should lose no time, before we ascertain it—this is to be done by a careful examination of the abdomen and the uterus; the first by the application of the hand externally; and the other by the finger or hand per vaginam. Should the accident occur before the rupture of the membranes, the tumour which they formed will shrink away; for, if the rent be through to the abdomen, it is more than probable that the membranes will give way, and the waters be discharged within it; but should the lesion stop at the peritonæum, they may remain entire for some time, though they may not again form a bag within the circle of the os uteri.

1513. When the abdomen is examined externally by the hands, the fœtus, if the rupture be complete, may readily be distinguished through its parietes; if the fœtus cannot be thus detected, it is presumable that it has not escaped entirely from the uterus—but we are to ascertain this by a careful and more extensive examination.

1514. If the accident take place after the discharge of the waters, the presenting part will either recede beyond the reach of the finger, or can be easily forced back by its pressure, (provided the head or presenting part has not already engaged in the pelvis)—if the former obtain, the hand should be introduced, and the nature of the case clearly ascertained—should the os uteri be well dilated or easily dilatable, the hand should be passed into the cavity of the uterus, so that the extent of injury be well understood. But should the os uteri be firmly contracted, so as to refuse admission to the hand, without the application of much force, the point should be given up; for nothing can justify a violent entry into the cavity of the uterus.

1515. When the laceration takes place at the neck of the uterus, or at its union with the vagina, the child, with its appurtenances, almost always pass into the cavity of the abdomen: in

either of these cases, the presenting part will immediately remove itself from the superior strait: when this happens, we should, as quickly as possible, ascertain whether the accident has taken place, of which this circumstance would instantly give the suspicion. In cases like these, the examinations to this effect are more easily conducted, than when the body or fundus is the subject of the laceration; as the parts involved in the mischief, cannot contract like the uterus itself—the uterus, under such circumstances, will be found, for the most part, firmly contracted either on the posterior or anterior portion of the pelvis, as it may happen to be the posterior, or anterior portion of the vaginal circle, that may have sustained the injury—the intestines will frequently prolapse through the wound, which removes at once all doubt as to the nature of the accident—it is almost needless to suggest the propriety of a cautious and gentle examination, after the hand has entered the abdomen.

1516. When the nature of the accident is ascertained, it behooves us immediately to attempt the relief of the unfortunate woman; and the means for this purpose are—first, to attempt delivery per vias naturales; and secondly, to perform the operation of gastrotomy.

1517. We may perform the first, whenever the neck, or its union with the vagina is the seat of laceration, provided the pelvis is of a good conformation, and the child has escaped into the cavity of the abdomen—the feet of the child should be sought for, and the delivery accomplished as in a case of turning—but should the pelvis be so contracted as not to permit the child's head to pass, this mode of delivery must be changed for the second. Should but a portion only of the child have escaped through the rent, and the head be engaged in the pelvis, the forceps should be used, or if we are certain of the child's death, the crotchet may be employed.

1518. When either the body or fundus, or both, have suffered, and the child has escaped into the abdomen, the delivery per vias naturales may be either difficult or impossible, even in a well-formed pelvis; for the uterus will most probably contract itself so much as to render the re-passage of the child impracticable; the only chance, in this case, is the immediate performance of gastrotomy: should a contracted pelvis complicate this case, the latter operation is the only alternative. But should the uterus remain flaccid, and its mouth yielding, and the pelvis well-formed, we may succeed, though with difficulty, through the natural pas-

sages—but if this flaccid state of the uterus be attended by a deformed pelvis, the abdominal section is the resource.

1519. Should the vagina alone suffer, and the child pass into the abdomen, we should deliver by the natural passages, provided the condition of the pelvis will permit: if it should not, gastrotomy must be had recourse to.*

1520. The operation of gastrotomy, I believe, is one which has never been performed in this country on the living subject, for rupture of the uterus; but there is no reason why it should not, when circumstances are sufficiently imperious—we have the experience of the European surgeons in its favour; and, however appalling it may appear, when viewed merely as an operation, it nevertheless would seem to add but very little additional suffering to the unhappy woman.†

1521. But to derive advantage from this operation, "it should be performed as quickly after the accident as possible, while the patient still retains strength; and the incision should always be made on the side of the abdomen which corresponds with the rupture of the uterus,"‡ if practicable; or I may add, if that side can be detected. Should either the anterior or posterior portion of the uterus have yielded, the child would most probably be in the middle of the abdomen, (provided the woman had not changed her position after the accident,) in which case the incision would perhaps be best made in the linea alba, as if the Cæsarean section were about to be performed.

1522. As every case must necessarily be interesting, as well as instructive, in which bold and judicious operations have saved life, I will relate some instances of success, following the operation of gastrotomy.

Gastrotomy.

1523. Dr. L. Frank relates the following interesting, though rather too generally described cases in which gastrotomy was successfully performed:

1524. Angela Grossi, of Parma, aged forty-four, had borne five children, and had reached the ninth month of her sixth preg-

* The reader, if he wish to see this subject more amply treated, may find it in "Essays on various Subjects connected with Midwifery," by the Author, p. 201.

† Thibault des Bois, Jour. de Med. for 1768.

‡ Path. Chirur. tom. II. p. 239, par M. Lassus.

nancy, without the occurrence of any accident. On the morning of the 9th of August, 1817, labour commenced; and whilst standing up, she was seized with a faintness, accompanied by vomiting. She was therefore placed on her bed, by the assistance of her husband and midwife. At that moment she stated that she experienced a feeling of laceration in the abdomen, and also a sensation of there being two children. A surgeon who was called in, asserted that the effort of vomiting had carried the child upwards; adding, that another might propel it downwards; and advised the patient to remain quiet."

1525. "The midwife, however, remarking that the abdomen swelled, that the vomiting did not cease, and that the breathing became irregular, called in Dr. G. Rossi. On examination, he detected a rupture of the uterus; and on consultation with his father, and other medical men, it was unanimously resolved, to have recourse to gastrotomy."

1526. Two hours after the occurrence of the accident, the operation was performed by Professor Cecconi, in the left hypogastric region, precisely at the point where the feet of the child were felt. When the incision was made, the child presented with the feet, and was extracted alive, together with the secundines. No bad symptoms are alluded to, and it is stated that the patient was perfectly recovered forty days after the operation. Three years after she had a seven months' child, which lived a fortnight. After her recovery, a ventral hernia presented itself in the situation of the cicatrix, which, though irremediable, was not productive of much inconvenience."*

1527. In Germany, the operation of gastrotomy has been performed with success, by Mr. Bulk, upon a woman of good constitution, and of thirty-six years of age. The patient, during her pregnancy, suffered from a severe pain in the left and inferior side of the abdomen: her menses were not suppressed; and every six or eight days a clot of blood and mucus came away from the vagina. Her general health was good.

1528. About the middle of the eighth month, while she was washing some linen, she suddenly felt as if something was tearing in her abdomen; at the same time, a swelling of the size of two fists, (poins,) formed in the right side, below the umbilicus. She fainted; and during six weeks she suffered dull pains in the abdomen. At this time she had true labour pains for forty-eight hours,

* Anderson's Quarterly Journal. Vol. II. No. 1, for Oct. 1825.

and was attended by a midwife. The os uteri dilated so little as to admit but one finger. The tumour disappeared during these pains. The patient recovered, with the size of the abdomen undiminished.

1529. In this condition she continued for two years and three months, menstruating regularly. She became again pregnant, and suffered but little inconvenience until the seventh month; when her abdomen became painfully distended, and of a bluish colour; fluctuation was induced on the least motion. At the full period, she was delivered of a large fœtus, which she suckled for fifteen days; the infant then dying of an aphthous affection.

1530. The milk ceasing to be secreted, she declined rapidly with hectic symptoms; the tumour reappeared below the umbilicus, of about the size of an egg; it soon opened, and discharged pus from small orifices. The patient's constitution was rapidly yielding, and gastrotomy was immediately performed. An incision was made with usual precaution through the linea alba into the cavity of the abdomen, from two and a half inches above the umbilicus, to within nine lines of the pubis; care being taken to confine the intestines. A fœtus of full size, in which putrefaction had commenced, was found on the right side of the uterus. "I raised, "says the operator, "the body with much care, and endeavoured to trace the umbilical cord. This was turned over the uterus to the left side, and terminated in a vascular substance in a state of suppuration, (probably the remains of the placenta,) which was situated below the great omentum. I pressed out and dried up, by means of a sponge, the pus which covered these parts. The uterus was an inch and a half in length, and an inch in breadth, of a pale rose-colour, and could easily be distended, (se laiss ait distendre aisément,) it was otherwise in a good condition.

1531. The wound in the abdomen was closed by sutures. The patient was in great danger from inflammatory symptoms for eight days; but eventually she recovered. She left her bed on the fifty-fifth day.

PART IV.

ON DELIVERIES PERFORMED BY CUTTING INSTRUMENTS, APPLIED EITHER TO THE CHILD OR MOTHER.

1532. Hitherto I have been treating of labours which could be terminated by the natural agents of delivery; those in which the hand alone could perform it; and those in which it was necessary and proper to employ such instruments as were calculated to preserve both mother and child. I have now to consider those unfortunate instances, in which the labour is impracticable without either mutilating the child, or subjecting the woman to the Cæsarean section, or the section of the ossa pubis, commonly called the Sigaultean operation.

1533. There are a number of causes which may place an unfortunate woman in the predicament of having her child mutilated, or force her to submit to the alternatives just mentioned. These causes are, 1st. A deformity of the pelvis; 2d. A deformity of the child, or its monstrosity; 3d. Accidental deformity, as hydrocephalus, dropsy of the abdomen, &c.

CHAPTER XL.

I. DEFORMITY OF THE PELVIS.

1534. This subject has already been treated of, (45, &c.;) but it was then mentioned as a mere deviation from the healthy measurement of the pelvis: I shall now consider the indications this unhealthy structure may produce. When the deviations are but small, a child may be delivered alive at full time; but the labour will be more tedious and painful, if the child be of the ordinary size, than if the pelvis enjoyed its full and proper pro-

portions. But the variations may be greater, or even at times excessive—the degree, therefore, will necessarily give rise to various modes of terminating the labour by artificial means.

1535. The resources of art under deformities of pelvis, are,

a. Turning.
b. Forceps.
c. Cephalotomy.
d. Cæsarean operation.
e. Premature delivery.
f. Section of the pubes.
g. Regimen during pregnancy.

Sect. I.—*a. Of Turning, in a Deformed Pelvis, as a Means of saving the Child's Life.*

1536. When treating of this operation expressly, I took occasion to observe, (736) that it was always one of hazard to the child, even in a well-constructed pelvis; à fortiori, the risk must be greater in a contracted one. For this operation to be successful, even under the best management, it will require, 1st. That there shall exist a proper relation between the diameters of the child's head, and those of the pelvis; 2d. That the waters shall not have been too long drained off; 3d. That the breast of the child, and cord, shall not suffer compression; 4th. That the head shall not be too long detained in the pelvis; and 5th. That the neck of the child shall not suffer too much extension after the body is delivered.

1537. To obtain these advantages, requires no common combination of favourable circumstances; and as these, for the most part, must necessarily be contingent, it is no way surprising that this operation should so often fail of success—and to all that may be required on the part of the mother and child to render it even *probably* safe, there must be added skill on the part of the operator; for, without this, very often the child would perish, though the case may have been the most proper, or of the most easy performance.

1538. Should the deformity, however, leave less than three inches and a half in the antero-posterior diameter of the superior strait, we need scarcely look to this operation for success, as regards the child; and when resorted to under such circumstances,

it must only be considered as a remedy for the safety of the mother. In this country, indeed, even the diameter just specified, would rarely be sufficient to give promise of success, under the best and most skilful management; for the transverse diameter of the head of the greater part of the children born at full time, would exceed three inches and a half: now, should this diameter exceed this measurement but a quarter of an inch, or even less, it would create a difficulty that would menace the life of the child. I well remember once to have sorely repented the trial, where I judged the small diameter of the superior strait would certainly have been equal to three inches and a half.

1539. It will, therefore, follow, that turning in a confined pelvis is, and must be, of doubtful safety, as regards the child. As one calculated to relieve the mother, or simply to terminate a labour, without taking into view its effects on the child, it might in many instances be successful; or, if the practitioner has been debating within himself, the comparative merits of the crotchet or turning, the latter will unquestionably merit the preference, since it gives a chance, though a forlorn one, to the child. But let it be observed, the consideration should have turned upon the employment of the forceps, and not upon that of the crotchet; for this should always be considered as a dernier resource.

1540. We have stated, as one of the essentials to easy and safe turning, is, that a proper relation of diameters should exist between the pelvis of the mother and the head of the child. In laying down this axiom, we would wish to be clearly understood to mean, the absolute proportions, and not the relative. Or, in other words, the respective diameters of the pelvis, shall be of such capacity as will permit the head to pass without any material obstruction when its corresponding diameters of the head shall be presented to them. If this be not the case, the force which must necessarily be employed to overcome the resistance created from the want of this proper relation of diameters will be such, as but too surely to destroy the child, and create at the same time, difficulties, which, perhaps, can only be overcome by the use of cutting instruments.

1541. Again; we have said, that, besides the proper correspondence of diameters, as just stated, it is almost a sine qua non that the waters should not have been too long drained off, to render even this favourable disposition available. For it is a truth, which almost every accoucheur must acknowledge who has attempted to turn in a strongly contracting uterus, that the want

of success by this operation, even in a well formed pelvis, is too often owing to its being undertaken when the uterus is very firmly embracing the child. If, then, we have to contend against the two difficulties just enumerated, it is more, perhaps, than ten to one, that we do not succeed in saving the child.

1542. We have also enumerated as another essential to the safety of the child, that its breast, as well as the umbilical cord, shall not suffer compression. But what skill or foresight can guard against such a contingency; nay, almost against such a certainty? And if this be beyond our control, as it too surely is, we need not wonder at so many instances of failure in this operation.

1543. We must again repeat, that the head must not be too long detained in the pelvis if success is to attend our exertions. But who can declare that this shall not take place? since the exercise of the most consummate skill cannot ensure it; and who can guard against the ill-devised manipulations of ignorance?

1544. Finally, we have declared that the neck of the child must not suffer too much extension. But who can ensure the life of the child against such a necessity,* even in the hands of the skilful?

1545. From what we have said, the conclusion will be easily collected, that, even under the more favourable circumstances, turning is to the child a hazardous operation; but that, under perverse ones, it is but too often fatal to it; and, that it must ever be looked upon as a doubtful alternative, rather than as a probably safe resource.

Sect. II.—*b. Of the Forceps in a Deformed Pelvis.*

1546. In my general view (761) of the forceps, I endeavoured to prove that their powers were pretty extensive, yet sufficiently limited. That their mode of action (784) was that of a double lever, with no mean compressing power—that this power, however, could not be employed (781) beyond a certain degree, with safety to the child. That, if more were exerted, it would be at the expense of the bones of the cranium, and the brain of the

* For if turning has been resorted to, and the child delivered all but the head, the delivery must proceed by mechanical force, of the operator's arms, or, preferably, by the forceps: this will prevent the separation of the head from the body.

child; therefore, there was a limit to their usefulness. In a pelvis where the opening of the superior strait in its small diameter will give three inches, these instruments have been successfully employed; of which Baudelocque* gives us an example which not only proves the useful powers of these instruments, but shows the little certainty with which the death of the child is marked, even by the combination of many of the most formidable signs. This case is full of instruction, and should be carefully read.

1547. But when the small diameter of the superior strait has less than three inches,† these instruments cannot be employed at the full period of utero-gestation with any chance of success. To be useful even then, requires that the head of the child shall be of moderate size, and yielding; well situated, and that a skilful hand should apply them.‡ As, however, they offer a better chance, if properly conducted upon the head, than turning, they should be employed always in preference to this operation, when even a force not to be called great, would be required to make the head pass the superior strait; for the child will suffer less from a compression of the head, than from the severe extension of its neck; which it must necessarily undergo, when detained in a pelvis in which the opening is less than four inches.

1548. It must, however, not be concealed, that these instruments are not safe, under the circumstances we are now considering, but in the hands of a few; and are only rendered so to them, by their superior professional attainments, and the long habit of using them. To the inexperienced practitioner, they should be entirely forbidden; not only because they may destroy the child, but also because the mother may be severely, or irreparably injured by their use. Should, however, the defect of size be in the lower strait, and that not excessive, the forceps will every now and then answer a valuable end, as the following case will prove:

* System, par. 1898.

† This is the limit fixed upon by Baudelocque and other French writers: it must, therefore, be borne in mind, that the French inch is one line or one-twelfth of an inch larger than the English inch; consequently, the three inches French will be equal to $3\frac{3}{12}$ths of the English, or three inches and a quarter.

‡ "But, inasmuch as we have not discovered the means of applying such pressure to and for the benefit of the child, without, in the mean time, compromising the more important interests of the mother, it should be held as the bounden duty of our art, in the treatment of such cases, (cases of narrow pelvis) to refrain from all inordinately forcible attempts to deliver with the forceps."—*Dr. Davis's Elem. Oper. Mid. p.* 140.

Mrs. —— had been in labour nearly six and thirty hours with a first child: the early part of her labour had been slow, but regular in its progress. The midwife to whose aid I was called, informed me, that the waters had been discharged after the uterus was well dilated; the pains had all along been good; that the child was *very low*, and seemed every moment *ready to come*, yet did not advance; for so soon as the pain ceased, it flew back to its old place, and had done so for many hours.

The woman was in good health and spirits, notwithstanding the length and severity of her sufferings: she was free from fever; had had her bowels opened, and passed urine but a short time before my seeing her—she was short of stature, waddled when she walked, and was very bow-legged. Upon examining her, I found that the lower strait was defective in its small diameter; the tubers of the ischia approached too much, and thus did injury to the arch of the pubes also. I waited for a pain to determine its influence—the head was well situated, but could not descend low enough to enable the vertex to pass under the arch of the pubes; it was, therefore, found rather mounted behind it. The head did not appear large, and its bones were supple.

And when a pain came on, the parietal bones would ride over each other, and the scalp be pushed considerably in advance. I waited to try the influence of two or three more pains; but the head only advanced during their action; for so soon as this ceased, it raised upwards, as it had done for a long time, as stated by the midwife. The cause of the delay was obvious—the parietal protuberances could not be forced by the uterus below the tubers of the ischia, that the head might pass through the external parts. I was of opinion that nothing could relieve the head from its perilous situation but the forceps; accordingly, I made it known to the friends of the patient, and subsequently to the patient herself—she cheerfully acquiesced in the decision; they were applied, and by merely maintaining the ground gained by each uterine effort, without exerting much tractive force, I succeeded in half an hour to deliver the poor woman of a living female child. The head was elongated to an unusual degree; but it recovered its natural shape in a few days.*

1549. It is not intended by what has been said, to discourage

* I was ever after obliged to deliver this patient with the forceps: this happened four times; and without the smallest accident to either mother or child.

the obstetric practitioner in the use of the forceps, in cases in which their application might be difficult; on the contrary, we would earnestly recommend to him the careful study of their mode of action, and the various manners in which they are to be applied. The usefulness and agency of these instruments in preserving the life of the child, as well as that of the mother, is no longer problematical; for they have been confirmed by the united testimony of the European and American practitioner of midwifery, for the last fifty years.

1550. Important, however, as the forceps are known to be by medical men, neither they, nor the skill which directs them, are sufficiently appreciated by the public at large; indeed, the practice of obstetrics is very far from being justly valued; and this must, we fear, for a long time remain so, as the public cannot easily be set right upon its utility. This involuntary injustice to this branch of medical science, arises mainly from the following causes. First, from the process of parturition being constantly viewed as an act, in which the practitioner has no other concern than to silently watch the operations of nature. This, we acknowledge, is strictly true in a very great majority of cases; but in admitting this, we are not to pass over without observation the exceptions, or those instances which require both prompt and judicious interference. But these exceptions are entirely lost sight of; and they are lost sight of, in many instances, because they cannot with propriety be made to meet the public eye, and this for reasons that will readily present themselves to a thinking mind, as well as the aversion every ingenuous mind has to the appearance of vain boasting. Yet the skilful practitioner has it often in his power to felicitate *himself*, that he has abridged severe suffering, or preserved human life; but for which, he neither expects, nor can he receive, any evidence of public approbation. This does not, however, arise from any reluctance on the part of the world to do him justice, but because the value and the nature of his exertions, and the indispensable application of his skill, must for the most part remain unknown, to every body but himself.

1551. Second. The difficulties with which the accoucheur has to contend, are almost unknown out of the profession; on this account, the most important operation which can possibly be performed, namely, the preservation of life by the use of the forceps, is put upon a par, nay, it is often placed below, some of the most trifling operations of surgery; for the public are not

aware, that the most difficult operation on the living subject, is the scientific application of the forceps, when the head of the child has not descended so low as to occupy the vagina.

1552. How much greater eclat do most of the operations of surgery obtain, than a delivery by the forceps! yet we do not fear, nor do we hazard a contradiction when we say, there is no operation in all surgery, that is not more easy of accomplishment, than the rational and just application of the forceps.

1553. Third. The comparative estimate of the mother's and the child's lives, contributes very much to lessen the value of manual interference in cases of difficult labour. For when any thing untoward arises, the life of the mother alone is taken into the calculation; the child may be immolated without a sigh, provided it be declared that either it, or the mother must be sacrificed. And if it be preserved, it is looked upon rather as a piece of good fortune, than as an evidence of any superior skill on the part of the practitioner.

1554. But let us not be supposed to charge the public with voluntary injustice on this subject; this is far from our meaning; we only wish to insist, that the difficulties oftentimes to be overcome by the accoucheur, in order to save life, is altogether concealed from public view; and of the value of which, of course, they cannot accurately judge. Yet we feel it is proper that some delicate and proper effort should be made to elevate the character of the well-instructed accoucheur above the ignorant and pretending practitioner; and to have a just value set upon the most difficult operation, in the range of medical science.

Sect. III.—*c. Cephalotomy.*

1555. This operation destroys the child, with the intention, it is said, to save the life of the mother, by preventing her from dying undelivered, or subjecting her to the Cæsarean operation. Dr. Osborn has treated this subject under two distinct heads; in conducting which he inquires, 1st. "Into the degree of deformity requiring the crotchet, the Cæsarean operation, or the division of the symphysis pubis; their comparative merit examined:" 2d. He then makes a "comparative estimate of the mother's life, and the life of the child in utero."

1556. His first inquiry results in his giving the preference to the crotchet; and from the following views. He says, "when-

ever the pelvis is so distorted in its form, and so contracted in its capacity, as not to permit the head of the child to pass unopened, it constitutes that degree of laborious parturition," for which the comparison of the merits of the crotchet, with that of the Cæsarean operation, &c., was instituted. Essays, p. 25.*

1557. That, "whenever a woman falls in labour, the small diameter of whose pelvis measures only two inches and three-quarters, one of the following circumstances must take place."

1558. "First, the child's head must be opened, and the contents discharged, that the bones may be permitted to collapse, and the volume being thus diminished, it may afterwards be extracted with the crotchet:" or,

1559. "Secondly, for the certain preservation of the child's life, the mother must be doomed to *inevitable destruction*, by the Cæsarean operation:" or,

1560. "Thirdly, as a mean between the two extremes, the mother must submit to the section or division of the symphysis pubis; an operation of less danger to the parent than the Cæsa-

* It would seem that theory, or conjecture, has had much to do in fixing the nature and value of the child's life while in utero, and that the low estimate attached to them, has arisen more from terms, than from a difference of qualities. Thus, Alphonso Le Roy tells us that "the birth of animals is a quick passage from one mode of existence to that of another." And, "that the child, while in utero, lives after the same manner as a vegetable." Velpeau has adopted these sentiments, with no additional value to the profession.

For we would ask, does this comparison prove other than that the child has life? Is it not a dispute about terms, to call the life of the fœtus while in utero vegetable life; and that which maintains its existence after birth, animal life? Has any one demonstrated that there is any difference in the quality of that principle which we term life in these two conditions of the animal? Does not the difference consist simply in the manner in which this principle is maintained? or, in other words, are not precisely the same principles essential to the child both before and after delivery? Certainly they are. While it is in utero, does not the fœtus require circulation, oxygenation, and nutrition, as much, quo ad hoc, as after it is born? That these essentials to its existence are applied differently, and maintained differently, we agree; but the nature, and importance of the means and agents are precisely the same. For the child would unquestionably die in utero, were either circulation, oxygenation, or nutrition withheld beyond a limited time; and death would follow, were either of these grand agents abstracted but for a short period after birth.

In a moral point of view, the turpitude of destroying the life of the fœtus by design, call it vegetable, or animal, as you please, will be the same; nor must we permit ourselves to undervalue it, or be seduced to destroy it wantonly, by employing terms which have no definite meaning; or, if they have a definite meaning, the destruction of the principle called life, must, in a moral light, be viewed as a crime.

rean section, but at the same time certainly less safe for the child;" or,

1561. "Lastly, If none of these means will be permitted, the wretched mother, abandoned by art to the excruciating and unavailing anguish of labour, will probably expire undelivered."

1562. From this it would appear, that every woman who has less than three inches in the small diameter of the superior strait, must die, or be delivered by the crotchet, by the Cæsarean operation, or the section of the pubes, if at the full period of utero-gestation. In this all writers agree. But Dr. Osborn is of opinion that nothing but the crotchet should ever be employed under such circumstances, unless the opening at the superior strait has less than one inch and a half; for when there is this opening in the anterior-posterior diameter of the superior strait, the child can be extracted by the crotchet, p. 64; and whenever a child can be extracted by the crotchet, neither of the other operations should be thought of.

1563. He is led to this conclusion, first, from his estimate of the value of the child's life while in utero, when compared with that of the mother. He declares the former to be "incomparably small," nay, "diminished almost to nothing, and affords the most irrefragable argument in favour of the delivery by the crotchet, in preference to either of the other methods," p. 24. And, secondly, from his having delivered a woman safely by the crotchet, whose pelvis *was said* not to exceed one inch and three quarters, at the upper strait.

1564. Dr. Osborn commences his inquiry by stating, "a being in the uterine state of existence, sustains no immediate loss by the deprivation of the living principle, and can scarcely be said to incur any other positive injury. Before the operation, the child in utero cannot suffer mental anxiety, or apprehension from the threatened violence; nor does it feel, I am persuaded, the smallest bodily pain, in the actual commission even of such violence." The question is not fairly stated here—it is not whether the child suffer from this violence or not; the question is, whether it shall have a chance to live, or be destroyed? The feelings of the child must not be taken into consideration, in weighing the question, which life, that of the mother, or that of the child, must be sacrificed. For if we deal honestly upon this subject, and conclude, that the life of either the mother or child must be forfeited, we are forced to the admission, that the child should be immolated, to preserve the mother. It then becomes fairly a

matter of comparison, which is the most valuable to society in all its relations. And I would yield the point without hesitation in favour of the mother's preservation; and I would do so, were the child a thousand times more sensible than it is. For did we withhold an operation from a persuasion that the child in utero is endowed with great sensibility, and that, like "the poor beetle that we tread upon, in corporeal suffering finds a pang as great as when a giant dies," I say, did we withhold an operation essential to the mother's welfare, from these considerations, we should be exalting the mere sensibility of the child above the usefulness and importance of the mother, to the husband, parents, friends, and to society. I must, therefore, insist that the sensibility of the child, be its degree what it may, must not be taken into the account, when this question is agitated.

1565. But let us believe the child to be as void of sensibility as a cabbage, or any other vegetable, while in utero; what does this prove as regards the proper question? certainly nothing—for necessity, and that necessity absolute, can alone justify the operation. For, were we to permit our sympathies to get the better of our duty, and suffer the mother to die from the exercise of feeling toward the child, we destroy her by such a proof of our sensibility; while, on the other hand, if we wantonly or heedlessly kill the child, because we have persuaded ourselves it possesses nothing more than vegetable life, or life without sensation, we *murder* it, in conforming to an hypothesis. I therefore repeat, that the properties of the child, be they what they may, must never enter into the calculation, when it is inevitably fixed that either it or the mother must be the victim.

1566. The doctor next declares, "as children before birth are incapable of *mental apprehension*, so it is as undoubtedly true, that they are not yet arrived at, or in possession of, *bodily sensation*, and, therefore, cannot suffer pain, or become objects of cruelty." I would inquire, how has the doctor ascertained that "children before birth are incapable of mental apprehension?" for on this his remarkable conclusion is founded. Has he any proof whatever that this is really the case?

1567. But before I proceed farther, let me show what doctor Osborn means by "mental apprehension."—"Before the operation, (of cephalotomy,) the child in utero cannot suffer mental anxiety, or apprehension from threatened violence; nor does it feel, I am persuaded, the least bodily pain in the actual commission even of such violence," p. 36. Again: "It is certainly from

that apprehension, combined with other circumstances of misery, which usually precede and accompany the act of dying, that death can in itself be considered as the greatest of human evils—and from every one of those, the child in utero is exempt," p. 37.

1568. From this it is evident, Dr. Osborn supposes that bodily sensation is dependent upon "mental apprehension," or, in other words, that there can be no "corporeal suffering," if there were no "mental apprehension." Is this agreeable to common, and daily observation? Has not the devoted ox power to perceive the "smallest bodily pain," because it cannot, or does not anticipate its fate from the butcher's axe on the morrow? Were we to adopt this hypothesis, it would make "mental apprehension" the cause of corporeal sensation, which would most effectually confound all our philosophy.

1569. If I should be charged with having wrested Dr. O's. meaning, though I have fairly quoted his words; if it should be insisted that, "mental apprehension," meant perception, still the doctor is chargeable with having employed a gratuitous datum—for he has not proved, that the brain of the fœtus, especially at full time, (the period at which the operation he advocates is to be performed,) is incapable of perception; and until this be done, it is in vain to contend, that the child in utero cannot feel "the smallest bodily pain." On the contrary, does not the child acknowledge this in many instances? Is it not frequently provoked by external causes to move its little limbs? Nay, does it not do this very frequently without, to us, an obvious cause? May these stirrings not be considered as the exercise of volition? Has it not a brain, and nerves, emanating from it? Are these nerves mere cords without sensibility? Is the brain a mere glandular mass without function? I can readily believe their condition to be imperfect, but I cannot admit them to be without power or property.

1570. Does not the heart carry on the circulation as certainly, and as perfectly, quo ad hoc, in the fœtus as in the born child? Could this organ perform its functions without a certain condition of the nervous system? If this be so, can the nerves be mere cords, without sensibility? If the nerves belonging to the heart be sensible, may not all others be so?

1571. In my opinion, then, Dr. O. has not made good his position; a position on which he appears to place much reliance for the support of his thesis, though in mine it has nothing to do with

the question, as I have just observed, (1564, 1565) for I must repeat, that necessity, and strong necessity, alone can justify the operation under consideration—the preservation of the mother's life is the only motive to action, and the only object in view—if the child must be the sacrifice for the mother's safety, that sacrifice is imperious, be the condition of the child what it may.

1572. Dr. Osborn next informs us, "that they (children in utero) cannot suffer from mental apprehension, is notorious to general observation. Even years elapse after birth, before the mind is susceptible of fear, or apprehensive of danger." Admitted: but what does this truism prove, as regards the subject in question? Nothing; for I still must insist, that necessity alone is to govern us; and if governed by that, the only question to be debated is, whether the child is to be *absolutely* sacrificed, for the *probable* safety of the mother? I say probable safety—for such only it is, as I shall attempt to prove presently.

1573. If we are under the necessity of opening the child's head, our social feelings would derive some solace, could we be sure it did not suffer, or were we even uncertain of its suffering from the operation; but every thing opposes our drawing comfort from this source; for however our understanding may be confounded by specious argument, or wily sophism, our feelings will constantly bear witness against the truth of the propositions, and the legitimacy of the conclusions. And I believe that God intended it should be so. What evils would flow from this source, did we but convince ourselves, that fœtal life was void of sensibility, sensation, or of value.

1574. The crotchet has been but too often wantonly employed, even where the practitioner had not adopted Dr. Osborn's opinion on the subject of fœtal sensibility; how much more frequently then, will it be employed, when the wholesome restraint of the contrary opinion is removed? I am persuaded that the exercise of true feeling toward the unborn child, has more than once saved it from a severe and painful fate; but it must also be declared as my opinion, that it has too often fallen a victim to a false estimate of the mother's danger—for I have known it used where there was the most healthy construction of the pelvis, and where a little address in the use of the forceps, or even a little more patience, would have preserved the child from a premature death.* For, as Dr. Blundell well remarks, "to per-

* I am happy to find my opinion on this subject strengthened by a similar remark by Dr. James, whose opportunities afford him ample room to witness the

forate the head, merely because the labour lingers, is a sort of murder; and if you do thus not from ignorance, but for the sake of saving time only, you are, I conceive, *in foro conscientia*, as criminal as the felon who dies on the gallows."—*Prin. and Prac. of Obstet. p.* 686.

1575. Dr. Osborn farther informs us, that "diseases which at any period attack the human body possessing sensation, with sufficient force to destroy life, are in general attended with such a degree of pain, as to excite extraordinary motion, and some struggle; at least in articulo mortis. It is highly improbable that this should take place in the uterus, and the mother be insensible of their effect," p. 40. This statement at once brings Dr. Osborn's arguments to issue. He declares the struggle of an infant in utero would be an evidence of pain, and of course of its possessing "sensation;" and, that if this struggle did take place even in articulo mortis, it is highly probable that the mother would be sensible of it—now, what is the fact upon this subject? Why, that I have been repeatedly informed by mothers, that they were apprehensive their children were dead, because after a severe struggle, or kind of fluttering, which has been described of longer or shorter duration, they felt them no more—and every accoucheur can bear witness to such statements from them.

1576. Dr. Osborn farther urges, that, "when we are compelled by dreadful necessity, to open the child's head while we know it is living in utero, that operation requires such extreme and *painful* violence, that, were the child endowed with the slightest sensation, he must of necessity feel it; and his feelings must necessarily be accompanied with such struggles and exertions, as would be emphatically expressive of pain, and must be readily perceived by the mother in a part so sensible and irritable as the uterus," p. 41.

1577. This is sheer sophistry—it is making a negative condition prove a positive position; or, in other words, it is making the absence of struggling prove the want of sensation; when the situation of the child in utero is such, very often when it is necessary to perform this operation, as to render such evidence of its sufferings impossible. For this operation is recommended to be performed after the waters have been expended, and the ute-

abuse of this instrument in the hands of ignorant practitioners: in a note to Burns's Midwifery, p. 35, note k, he says, he fears that "embryulcia is frequently resorted to very *unnecessarily* at least, to make use of the mildest terms."

rus is firmly contracting round the body of the child. Now, it is well known to every accoucheur of any experience, that the uterus will, in many instances, so strictly gird the child as to preclude the possibility of "exertion," be its feelings what they may.

1578. Besides, in a case which I witnessed of the operation of cephalotomy, the woman declared to me without inquiry, that the most painful part of it was the struggles of the child. Now, in this case the waters had been but recently discharged, and the uterus contracted but once in about twenty minutes. I mean not to lay undue stress upon this case; for it is not essential to my argument. I well know the imagination does much upon such occasions; and that a convulsive action of the uterus may have been mistaken for the motions of the child; though it was precisely such a case as would lead to the belief, that the poor woman was correct, for the child was certainly alive when the operation commenced; the waters had been expended but a short time; and the woman's observation was spontaneous, and unprovoked.

1579. Dr. Osborn, however, tells us, on the contrary, that "upon accurate and repeated inquiry in several such cases, he could not learn that the mother was sensible of any such alteration in the motion of the child, even at the commencement of the operation, when the violence offered to it first takes place, and must be most painful." This statement of Dr. Osborn, amounts but to this negative; that in the cases in which he made "repeated inquiry," no struggles were perceived; but this is very far from proving, that none upon any occasion could take place. For this might well happen in "several cases," yet not be true in all; and if there have been one case in which the child was known to struggle in consequence of the operation, it is every way sufficient to destroy the arguments of Dr. Osborn; since he makes struggling a proof of sensibility—and I most sincerely believe many such cases have occurred. There are two especial reasons why this may not commonly happen: 1st. As stated, (1577;) and 2d. The child is sometimes dead before the operation is commenced. This statement of Dr. Osborn seems, however, to be confirmed by Dr. Blundell, who says, "Having given myself up to the more difficult part of the practice, I have too *frequently* had occasion to use this instrument, (the crotchet;) and on these occasions, asking the mother whether she has felt the child move, I have usually received an answer in the nega-

tive. Whether it be that the sensibility of the brain is but small even in the adult, so that from this cause the fœtus does not feel so much pain as *à priori*, we should have expected, or whether some other cause be in operation, I am not prepared to decide; but the fact is well ascertained, and it seems that little struggling is produced." Now, however specious this statement may at first sight appear, it, nevertheless, amounts to nothing. In the first place, it is not certain that the brain of the adult, even has a feeble *sensibility*, but injuries, like embryulcia, will certainly destroy life. A bullet passing swiftly through the brain of the adult, cannot be proved to be painful, nor will it cause struggling; but who doubted that the individual possessed feeling before it was destroyed, though this was so instantaneously done, that no token of it could be manifested. Secondly, Dr. Blundell does not say he always received a negative answer to his question, but he did "*usually*." A single exception is sufficient for our purpose, and that is given us in the word "*usually*." Thirdly, there may have existed, in the majority of these cases, a physical impossibility to struggle, from the firmness with which the tonic contraction of the uterus embraced the child. In evidence, however, that Dr. Blundell was not confirmed in his own position, he says, "It is not true, that the child in utero is destitute of sensibility, *as some have imagined*, and as the accoucheur would willingly believe, when he is about to use the perforator. I have, myself, in turning, felt the mouth of the fœtus, and have inserted my finger, to know whether the little infant would suck. Now, in two instances, I found it has sucked as vigorously before birth as afterwards: thus showing that it felt hunger; that, moreover, it perceived the finger, that it had sense enough to perform the operation of sucking; therefore, that its mind was in action.—*Princip. and Prac. of Obstet. p.* 98.

1580. "Having proved," continues Dr. Osborn, "that the loss which the child sustains, by the deprivation of the living principle, is so extremely small as almost to vanish to nothing, and that its bodily sufferings in the act of deprivation are absolutely none, it becomes proper, next, to inquire what is the value of an unborn child to its parents and to the community," p. 42.

1581. "Before the birth of the child, *parental affection has not taken place*, which, for the wisest and best purposes, is one of the strongest, the most universal, and perhaps, the most uncontrollable passions of the female breast; often changing, even in the subordinate parts of the creation, the very nature of a timid

mother, into that of a ferocious animal. Disappointment of expected pleasure only, not the loss of any object of this powerful passion, or the loss of any actual enjoyment, is the sacrifice the unhappy parent makes on this occasion," p. 43.

1582. We are of opinion, that Dr. O. is far from having *proved*, (except to himself,) that which he so complacently states he has done, (1579.) And, if he had really "proved" that which we think he has merely taken for granted, it still would have no bearing upon the subject—the degree of sensibility of the child while in utero, or whether it possess any, is not the question, as I have before declared; for neither view of this question should prove a motive of itself to the operation; nor should either deter from it; for this point must be settled upon other principles.

1583. But where Dr. O. learned that parental affection did not exist before birth, is difficult to say; for I must declare, and I do this without fear of contradiction, that the affection of the parent is strong, nay, oftentimes very strong, for the child while in utero —and if any accident befall it, a sorrow, and sometimes of a deep kind, is for a long time indulged—I have known two instances of protracted, and deep-seated gloom, follow the birth of still-born children; and in one, it was not removed until a subsequent pregnancy gave promise of a more fortunate result; the other gradually yielded to time, and change of scene.

1584. It would be idle to say that these were not cases of disappointed or lacerated *affection*, but the mere privation of a promised or anticipated pleasure. Besides, Dr. O. tells us, that "parental affection" converts, in the brute, "the timid mother into the ferocious animal;" from whence arises this recklessness of danger in the "timid mother," in defence of her offspring, when she exposes herself to death, and often meets it fearlessly in attempting to protect it. What anticipation of future or "expected pleasure" exists in them? there are not, nor cannot be, any promised joys here; they look not forward for such reward; yet they unceasingly display affection and courage; that might put to shame some, who *should* derive delight from offspring. Dr. O. could not have been a father.

1585. Dr. O. pursues this subject by observing, "Had parental affection commenced at the time of conception, or when the embryo is first formed; and had it continued increasing during gestation, as the fœtus advanced in growth, by the time of birth the passion would have been mature, and its influence most powerful, and the mother's sufferings would have been greatly aggra-

vated by the loss of a beloved child." And is this not precisely what happens in a large proportion of cases? Who has not witnessed the joy of a mother at the first evidence she has that her child lives within her? Who has not witnessed the growing affection of the parent as gestation advances? and who has not observed the sorrow, when all this maternal solicitude has proved unavailing? What motive governs the mother, when she submits to the Cæsarean operation, or yields to the section of the pubes. Love, unbounded love for her unhappy offspring! And who that has witnessed the dreadful operation of the crotchet, cannot bear testimony to the agony of the mother for the loss of her unborn child? If these things were denied by Dr. O. I must repeat, he is no father.

1586. Dr. O. goes farther; he declares, "such a passion, (maternal affection,) could not be directed to any useful purpose, during the existence of the child in the uterus; nature, who never performs works of supererogation either in the physical or moral world, has not yet kindled it in the mother's breast; it begins only with birth: and parents in general may, I think, be literally said to suffer nothing, by the loss of an unborn child."

1587. To this I will briefly state, that maternal affection is constantly necessary from the moment conception is believed to have taken place, until the final expulsion of the child from the uterus. Were a woman not influenced by strong affection to the protection of her child while in utero, she would have no reward for the many, and oftentimes severe sufferings, and privations, during that period; and were not this love for the child paramount to every other feeling, as a general rule, there would be no motive for its preservation—carelessness or design, might constantly circumvent the great object of creation. And, with respect to his conclusion, I appeal to the whole world for its refutation.

1588. Again, the Dr. says, "to society, likewise, the loss of any individual child must be exceedingly small, when it is known by daily observation, what great numbers of children are still-born, or die without such violence before birth; when it is likewise known, how very precarious is the chance of a child's living two years; but how most of all precarious, is its arrival at that period of life, when it can be of any service to its fellow creatures, or even participate itself in the enjoyments of the world," (p. 45.)

1589. To me it is truly a matter of surprise, that the various

contingencies which may prevent a child from being born alive, from its continuing two years upon earth after birth, or from arriving at manhood, should be employed as an argument against the value of its life. It appears to me, that it should have a diametrically opposite bearing; for, were the birth of a still-born child a rare occurrence; were it almost certain that children should arrive at the age of two years; their arrival at puberty, or beyond it, nearly sure; the occasional loss of a child by embryulcia, or any other violence, would then be but little felt: but when such violences are to add victims to the already too long list of human deaths, they must be considered as evils; whatever may be the necessity for employing them.

1590. I admit, that society suffers but little loss on account of "any individual child," so long as the loss is confined to that individual child; but when this indifference to "individual" life goes beyond a single instance, we cannot foretell where it may stop—it may extend to thousands, for thousands are but aggregated units.

1591. Dr. O. concludes this remarkable essay in these words: "In estimating the value of the life of the unborn child at so low a rate, I *most earnestly* request the medical reader will never lose sight, that it is only in comparison with the mother, or when the child's life is put in competition with her safety, that any arguments on this score are entitled to the smallest weight. It is for the preservation of the mother's life only, that we can justify the practice here recommended and insisted on," (p. 45.)

1592. It does not appear to me at all necessary, that the value of the child's life should have so low an estimate, in order to have arrived at the above conclusion—it was every way sufficient for the purpose for which the comparison was instituted, that the value of the mother should have been deemed greater. I fear, Dr. O. is chargeable with having done mischief, by the view he has taken of this subject; for I do know full well, he has been quoted in support of "cephalotomy," where its necessity, in my estimation, was far from being absolute.

1593. As no possible advantage can result from the manner in which Dr. O. has treated this inquiry, it is to be lamented that it was ever agitated, since the subject has not derived the smallest elucidation from it; though it may occasion serious, and often repeated mischief. Had he treated this matter differently, and shown how precious the life of a child is, yet, however precious, that that of the mother is still more so; and that nothing

but imperious necessity should be permitted to institute a comparison of their respective values, when one or other must be the sacrifice, it would, in my opinion, have more certainly served the cause of humanity, and much more effectually have promoted the interest of science.

1594. I shall pursue this subject a little farther, by offering a few remarks upon "Elizabeth Sherwood's case," by which Dr. O. supposes he has ascertained the minimum opening of a pelvis, through which a child at full time may be extracted by the crotchet.

Observations, &c., on Elizabeth Sherwood's Case, as related by Dr. Osborn.

1595. The whole of Dr. Osborn's arguments on the subject of "embryulcia," are intended to show, 1st, that this operation decidedly merits the preference over the Cæsarean section, wherever there is an inch and a half of opening at the superior strait; and 2dly, that it is never justifiable to perform the latter operation, when a diameter of this size really exists: these positions he attempts to illustrate, by the recital of the melancholy case of Elizabeth Sherwood.

1596. The comparative merits of these two operations should alone be decided by the advantage one may possess over the other; and this advantage determined by the general results of the respective operations. Dr. O. condemns without reserve the Cæsarean section, as consigning the woman to "inevitable destruction," while a number of equally respectable men, recommend it in preference to the crotchet; affirming it to be equally safe, and decidedly more advantageous, as the child has a chance of life. I shall, however, reserve my consideration of this subject, until I speak of the Cæsarean operation itself; and shall now proceed to make a few observations upon the case on which Dr. O. is determined to rely, for the support of his opinions upon this point.

1597. Elizabeth Sherwood's was a case of extreme deformity; she was but forty-two inches in height—she could neither move nor stand, but by the aid of crutches. In her 27th year she became with child, and was admitted, for the purposes of delivery, into the Store Street Hospital, London. After her labour commenced, it was at first contemplated to perform the Cæsarean operation, as "*there would be a certainty of preserving one life at*

least." But this humane and proper determination was abandoned, it would seem, with as much facility as cruelty, because Dr. O. and his friends "were *rather disposed to believe* that the child was dead."

1598. Not a single reason is given for the "*disposition to believe the child to be dead*"—nor were they satisfied themselves that this was the case, from the doubtful and careless way Dr. O. has expressed himself on this point. It was due to the public, to the profession, and to themselves, to have stated at large, the grounds of this belief; and, if they were well founded, the operation, which soon after commenced, would certainly have been justifiable: if the child were not dead, it might admit of doubt. However, the opening of the head was decided upon; and the child was ultimately delivered. It is upon this delivery, and the state of the pelvis, as declared by Dr. O. I propose to offer a few remarks; remarks which suggested themselves by carefully reading the case, but which created strong doubts of the fidelity of the representation;* for if the case be faithfully related, it almost disposes us to say, he had performed *impossibilities*.

1599. Dr. O. commences his account of the examination of this poor woman, by stating, "that immediately upon the introduction of the finger, he perceived a tumour equal in size, and not very unlike in the feel to a child's head." This was the projection of the sacrum, and so advanced towards the pubes, as to leave but a space of three quarters of an inch. On the left side of this projection, towards the ilium, there was a distance of about two inches and a half; leaving a space of three-fourths of an inch. On the right side there was rather more than two inches; with an opening in its *widest part* of one inch and three quarters; gradually, however, narrowing each way. So much of the pelvis.

1600. From the data here given, both the superior and inferior straits must have been faulty—the lower, I presume, to such a degree, (though nothing of the kind is mentioned,) that the hand could not be introduced; or, at least, not easily; since the projection of the sacrum was "in size and feel like a child's

* In this remark, I am by no means to be understood to insinuate, that I call into question the veracity of Dr. O. I merely suggest, that as mathematical precision could not be arrived at, an error in estimate may have crept into the account; since, from the great interest which was excited, as well as the confusion consequent upon an operation under such circumstances, extreme accuracy could not, perhaps, reasonably be expected.

head;" consequently, there must have been extreme difficulty in ascertaining the situation of the head, either as regards its position or firmness; for the finger could not reach so high without the introduction of the hand.

1601. He next informs us, "the os uteri, though but little dilated, was soft and flabby;" "the membranes were not yet broke, but with some difficulty he perceived the child's head, through them, situated very high above the projection." From whence did the difficulty to touch the child's head arise? its remoteness—the hand then could not have been introduced into the vagina, or this "difficulty" would not have existed. In an examination so important to the welfare of his patient, it is presumable that Dr. O. would have introduced his hand, had this been practicable. I shall employ this conclusion presently.

1602. Next morning "no alteration had taken place either in the state of the os uteri, or the position of the child's head." The membranes had given way during the night. Dr. O. now availed himself of the opinions of several celebrated accoucheurs and surgeons, neither of whom gave greater dimensions to the upper strait than had been given by him; some even less. The Cæsarean operation was first suggested; but abandoned, as stated above, without any apparent good reason.

1603. Dr. O. now commenced the operation of "embryulcia," and says, "even the first part of the operation, which, in general, is sufficiently easy, was attended with considerable difficulty, and *some danger*." From whence arose the danger? the wounding of the soft parts of the mother, I presume. "The os uteri was but little dilated, and was awkwardly situated in the centre, and most contracted part of the brim of the pelvis"—that is, where there was but a space of three-fourths of an inch. "The child's head lay loose above the brim, and scarce within reach of the finger, nor was there any suture directly opposite to the os uteri." Would it not seem to require an unusual perfection in the tact, under such circumstances, to satisfactorily determine there was no suture opposite the os uteri?—probably there was none; but to ascertain and satisfy ourselves, as Dr. O. appears to have done, would require, as I have just stated, an uncommon degree of nicety of touch; for it must be borne in mind, there was no pressure at this time on the head to make the bones ride over each other, and by which the presence of a suture might be detected or even suspected; on the contrary, "the head lay loose above the brim, and scarce within reach of the finger."

1604. I grant, however, it is not fair to suppose that one cannot do that, which another would find impossible. Yet I must consider myself safe in the remark, that a little pressure from the finger, and some resistance from the head, would have been essential to the discovery of a suture, had one even been there.

1605. Dr. O. proceeds to say, "he desired an assistant to compress the abdomen with sufficient force to keep the head in contact with the brim of the pelvis, so as to prevent its receding from the scissors, upon the necessary pressure of the point, to make the perforation; I introduced them, with the utmost caution through the os uteri, and, after repeated trials, at length succeeded in fixing the point into the sagittal suture, near the posterior fontanelle." All this is so very circumstantial, as to excite wonder, in no small degree—first, there was no suture opposite the os uteri; 2dly, the os uteri was in the centre of the projection, and not well dilated, and at a part where there was a space but of three-quarters of an inch; 3dly, the head was forced to keep its situation, that the scissors might enter; in which, after several attempts, he succeeded to penetrate a suture, and that "the sagittal suture near the posterior fontanelle!!" Now, I think I do not disparage the tact of any man, either living or dead, when I say, that none other than Dr. O. could have told into which of the sutures he plunged his scissors under the same circumstances.

1606. Dr. O. now tells us of some of the difficulties attending his enterprise, arising from his attempts to break down the bones of the cranium: confessing that "the instrument at first invariably slipped, as often, and as soon as it was fixed, or at least before he could exert sufficient force for this purpose." It would be instructive to know what parts of the mother received the point of the crotchet "when it slipped;" for we are forbidden, from the description of the pelvis itself, to suppose the point was guarded by the other hand, since it could not possibly be introduced profitably, (1601) if at all, into the vagina, for this purpose.

1607. At length the Doctor succeeded in firmly fixing the instrument, even into, he believes, the foramen magnum, of which he availed himself "to the utmost extent, slowly, gradually, but steadily increasing the force, till it arrived to that degree of violence, which nothing could justify but the extreme necessity of the case." I would ask what must have been the condition of the soft parts against which this force was exerted? I have known much less force than that "degree of violence which nothing

could justify but the extreme necessity of the case," followed by severe, and even hazardous, if not fatal consequences. But in this case Dr. O. was ordained to triumph; over not only nearly insuperable difficulties, but also over the consequences of the extreme violence he was obliged to use to accomplish the delivery. In my hands, after such violence, I am disposed to believe, nay, almost sure, the woman would have died; not so, Elizabeth Sherwood; for she was reserved for another trial of a similar kind, and not being under the care of Dr. O. she died.

1608. But, notwithstanding this great exertion of force, it was urged to no profitable purpose; he therefore abandoned the idea of breaking down the base of the cranium by the crotchet, and then most happily succeeded in effecting by address, that which could not be overcome by force; for, by a little management with two fingers, he was fortunate enough to place the base of the skull edgewise, which permitted it to pass, by a continuation of the force applied to it. Now, only let us consider how wonderful Dr. O's. achievement in this instance must have been:—first, he accomplishes the penetration of the skull, and the evacuation of the brain; next, he succeeds in detaching by the crotchet every part of the bones from the cranium, except its base, through an aperture of one inch and three-quarters in width in its greatest capacity, and this gradually diminishing; it had, however, *rather* more than two inches in length. Though this removal of the bones is not exactly expressed, it must be so understood, or he could not have turned the base of the cranium "edgewise." Soon after this, his difficulties were at an end, by the successive delivery of portions of the child's body, &c.

1609. This case, from its success, is to serve as an instance of the triumph of skill and of perseverance over the greatest possible difficulties which can be well encountered in a labour; and one as proving clearly and distinctly the superiority of the crotchet over the Cæsarean operation, though the woman endured inquisitorial tortures with "surprising firmness and fortitude" for three hours, and most miraculously escaped with her life!! I say miraculously escaped—for who could, or who would anticipate success from such violence, under such circumstances? I am persuaded, that neither Dr. O. nor his compeers looked forward to such an issue, at the moment of its performance; and it is nothing more, if the whole be faithfully related, than an instance of how much the human body can bear, and not an example from which either the young or the old practitioner, can safely draw

conclusions in its favour. I have seen death follow the use of the crotchet where there was neither the same degree of deformity, nor the same violence necessary to effect delivery; and where I believe as little injury was sustained by the soft parts, as the nature of things permitted. I shall again have occasion to speak of the risks of embryulcia.

1610. The mode of performing embryulcia is sufficiently simple, if we merely regard the opening of the head, and the breaking down the texture of the brain; but the extraction of the bones in a confined pelvis is replete with difficulty, if we are sufficiently mindful of doing no injury to the soft parts of the mother; and on this almost every thing depends. The head, if moveable at the superior strait, should be fixed, if the uterus, after the evacuation of the waters, does not contract with sufficient force to do this—the point of Smellie's scissors must then be made to penetrate the cranium; and if a suture can be found, it should always be preferred—when they are introduced as far as their shoulders will permit, the handles are to be separated to some distance, and rotated in that situation, until an opening of sufficient size to admit the crotchet be made—when this is done, the crotchet must be passed into it, and the brain broken down with it. It is never necessary to use any other instrument for this purpose.* When this is done, the point of the crotchet is to be fastened in the nearest portions of bone; and it must, if practicable, be guarded by the fingers of the other hand against slipping—if the bones collapse readily, and the pelvis be not much contracted, the head may pass nearly entire; but if it is necessary to employ much force, the portions of bone on which the crotchet is fixed, will successively give way—the detached portions must be carefully removed from time to time; taking care not to wound the vagina in extracting them.

1611. Dr. Osborn recommends the early use of this instrument, when it is necessary to employ it; and to permit the woman to rest for thirty hours, that putrefaction may take place in the child, as this will very much facilitate its extraction. Should the child have been dead some time before the operation, we

* Dr. Davis's craniotomy forceps are said to facilitate this operation very much —of this we can say nothing practically. We refer the reader, with much pleasure, to a paper by Dr. Meigs, "On the Method of effecting Delivery in Cases of Deformity of Pelvis." In this, he will find some interesting and useful hints for terminating such cases, together with improvements in the instruments to be employed for this purpose.

need not wait so long, or perhaps not at all. With a hope of diminishing the danger of cephalotomy, Baudelocque the younger has invented an instrument, "for crushing the head of the *child dead in the body of the mother;* a new way of terminating laborious labours." It is called a 'cephalotribe.'

This instrument is said to be capable of reducing the head of the child, when dead, to its smallest possible size, and thus avoid all the risk the soft parts of the mother incur, as well as protecting the practitioner from severe and sometimes even fatal wounds. The mechanism of this instrument, from its great mechanical power, seems well qualified to crush the head after it has been seized by the blades of the instrument; but here is the rub, in our apprehension: this must always be at some uncertainty; as much so, at least, as the forceps, and all who have tried them, when the head has been at the superior strait, know the difficulty of using them; but not so to those who speculate upon the use of these instruments in their closets. The instrument, as far as we can judge of its modus operandi by a plate of it, seems well calculated for its intended purpose. It is extremely strong and heavy, weighing five pounds and a half; a weight many times heavier than that of the forceps; but this can be, in itself, no very serious objection; as it is not to be made a companion of the accoucheur.—It is lauded much by Dr. M'Phail of Baltimore, who says he has known it to be employed "where the crotchet could have been of no avail:" which we confess we do not clearly comprehend; for it requires, for its use, as much space, at least, as the crotchet; and, consequently, this instrument (the crotchet) can be used wherever we should suppose the cephalotribe could.

This instrument is restricted in its use to cases in which the child is dead, or believed to be so: if living, the Cæsarean operation is the only proper resource.

Messrs. Boyer and Dumérel were appointed by the Royal Academy of Sciences a committee to examine the advantages of this instrument: their report is not exclusively in its favour; but Dr. M'Phail says, "its use is sanctioned by experience; the danger apprehended from its application by Messrs. Boyer and Dumérel (high authorities) is entirely imaginary." *Nous verons.*

Dr. M'Phail states, with much propriety, the following truths, respecting the use of the crotchet. "The danger attending the use of cutting and pointed instruments, in the practice of midwifery, is too well established to need any comment: the many

deaths that have occurred from their use; the many fistulæ that have followed the injuries inflicted by them upon the rectum and bladder; the many lacerations of the vagina and tearings of the perinæum; and last, though not the least, the great risk run by the accoucheur of mortally wounding himself, during the manipulations necessary to their application, should induce us to hail, as a public benefactor, one whose fruitful genius has conceived and brought to perfection a means of obviating all these."

Sect. IV.—*d. Of the Cæsarean Operation.*

1612. This operation is proposed as a means, in cases of extreme deformity, to preserve the life of the child, or the mother, or both. The history of this operation offers proofs of success, as well as of failures; and it appears to be agreed upon all hands, that nothing can justify its performance, but such cases as would require the use of the crotchet for their termination—the question then resolves itself into this: under extreme deformity, by which of the operations will the patient and society be most benefited?

1613. From an attentive consideration of both of these operations, I am in favour of the Cæsarean operation, wherever there would be an absolute necessity for the use of the crotchet to the delivery of the child; and for the following reasons:

1614. First, because the child must inevitably be destroyed by the use of the crotchet.

1615. Secondly, because, from all I can learn, and all that I have seen in the employment of this instrument in cases of extreme deformity, (though I confess my own experience in this business to be very limited,) the risk appears to be very great to the woman;* and, as just stated, certainly fatal to the child.

1616. Thirdly, because there are cases in which it is impossible, at least in my opinion, even not excepting such as may have an inch and a half in the antero-posterior diameter, to deliver with the crotchet.

1617. Fourthly, because where this instrument is employed, under the most favourable circumstances in which it would be

* Baudelocque, nephew to the late celebrated accoucheur, says that more than half of the women die who have embryulcia performed.—*Archivés Générales de Medecine, &c. tom. xxi. Oct.* 1829.

justifiable to employ it, there is a constant and a great risk to the mother, with the certain sacrifice of the child.

1618. In my remarks upon the choice of the crotchet, and Cæsarean operation, I must always be understood to have reference to cases where it is ascertained, or is highly presumable, that the child is living; for if the child be dead, and this satisfactorily proved, then the crotchet, under a sufficient diameter of pelvis,* should be preferred.† See chapter on the uncertainty of the child's death.

1619. But if the child be dead, and the delivery *impossible* by *the crotchet*, the Cæsarean operation should be proposed, as a dernier resource.

1620. Our opinions upon the propriety or danger of the Cæsarean operation, will vary as we may consult the British or the continental accoucheurs upon the subject—the former declaring its invariable failure to the mother, though sometimes fortunate to the child; while the latter assures us, it frequently succeeds with both. Whence arises this difference in result?

1621. M. Tenon declared to Dr. Garthshore,‡ that in his opinion the reason why it had so seldom succeeded in Great Britain, was because, in that country, the operation is almost invariably deferred too long; for the patient is suffered to be almost in articulo mortis, before it is undertaken.

1622. It is no longer a question among the continental accoucheurs, which of the two operations is to be preferred, when there is an absolute necessity for either. The Cæsarean section is almost exclusively adopted; and the success attending it is sufficiently great, agreeably to the latest and best informed writers, to warrant this preference. Though the practice hitherto in Great Britain has been almost uniformly fatal, it is, nevertheless, considered a resource of the art by several of its most eminent men; and they fail not to recommend it, whenever delivery is impracticable by this instrument; and even where it might be effected,

* By a sufficient diameter, I mean, where there is at least two inches in the antero-posterior, and at least three and a half in the transverse; below this, delivery per vias naturales, I repeat, I believe to be impossible. And it is a moot point, whether, with a diameter of full two inches, &c., the risk to the mother is not as great as the Cæsarean section; yet in this instance, and with a dead child, the crotchet would merit the preference, as it is apparently the less severe operation, and one that would more certainly meet the public approbation.

† "But if the child be dead, nothing can excuse operations upon the body of the woman for the extraction of a corpse."—*Boyer and Dumérel's Report.*

‡ Hull's letter to Simmons. See note to par. 1615.

but perhaps at an equal hazard to the woman. Drs. Hull and Denman, and also Mr. Burns, may be considered as good authority upon this subject. Indeed, Dr. Osborn, it would seem, had failed to convince his friend and associate, Dr. Denman, of either the superior safety of the crotchet in extreme deformity, or of the invariable fatality of the Cæsarean section; for he has not quoted him as authority for the first, nor coincided with him in the latter. Dr. Denman decidedly favours the Cæsarean section, under circumstances wherein Dr. Osborn would have proscribed it. And in some instances, Dr. D. is inclined to consider the operation in a moral point of view: he queries, "Suppose a woman was so unfortunately framed, that she could not possibly bear a living child by any method hitherto known. The first time of her being in labour, no reasonable person could hesitate to afford relief at the expense of her child: even a second and a third trial might be justifiable to ascertain the fact of the impossibility. But it might be doubted in morals, whether children should be begotten under such circumstances, or whether after a solemn determination she cannot bear a living child, a woman be entitled to have a number of children destroyed for the purpose of saving her life; or whether, after many trials she ought to submit to the Cæsarean operation, as the means of preserving the child at the risk of her own life, if she will submit to have children under such circumstances. This ought to be considered."—*Introduction, Francis's ed. p.* 423.

1623. Notwithstanding all that Dr. Osborn has declared in favour of the safety of the crotchet in extreme deformity of the pelvis, he appears to have carried conviction to the minds of but few; and this unqualified assertion that the Cæsarean operation is "inevitable destruction" to the mother, is almost daily contradicted by the promulgation of successful cases. That it is an operation of great hazard, no one will deny; but that it is necessarily fatal, has been contradicted by success, hundreds of times.

1624. On the continent of Europe, this operation is resorted to at an early period of the labour; before the woman is either exhausted by the continuance of unavailing pains, or is in a state almost of gangrene from fever. The uterus is cut before it is inflamed, and the child is extracted before it has expired; and the attempt to save both mother and child is sometimes crowned with the happiest result. Is there not, then, strong reason to believe, that, were the same independence exercised by the

surgeons of Great Britain towards the poor woman who suffers from deformity, the same fortunate issue would happen as in France and Germany,* and as frequently? I am by no means of opinion that the failures, in England especially, have been owing to climate—procrastination is the cause of the evil. An interesting case is related in Rust's Magazine, which we shall transcribe.

Caroline Bechang was admitted into Graafe's Clinicum, in an advanced stage of pregnancy; she was thirty years old; much deformed by rickets, and measuring four Rhenish feet in height. On the 20th September, after having been five days in labour at the full period, pains severe, and the os uteri dilated, she consented to the Cæsarean operation.

A little after two o'clock, Graafe passed the forefinger of his left hand, immediately below the umbilicus, and with a large scalpel made an incision downwards in the linea alba, to within an inch of the pubis; dividing the entire parietes, and even penetrating the substance of the uterus. A second incision was made to penetrate the uterus, and expose the placenta, which, as had been anticipated, was found upon the fore part of the fundus of this organ. The assistants now firmly compressed the edges of the divided abdominal parietes upon the uterus itself, to prevent the protrusion of the intestines: in this they succeeded; and Graafe carried his hand in a moment to the fundus; separated the placenta with his fingers and thumb, and then withdrew it and the child almost together. The child was very active, and cried lustily. The uterus immediately and suddenly contracted, and the bleeding was inconsiderable; for not more than twelve ounces were lost, and no ligature was required. The whole operation was completed in four minutes and a half. The wound was secured by three broad sutures and adhesive plasters, assisted by a bandage round the abdomen. The child weighed six pounds, and was well formed.

During the operation the patient was sick, and vomited a little. In two hours she had pain and fever: V. S. ℥xij. draught with

* In both these countries, this operation has been repeatedly performed, with the most entire success, and we, recently, have it in our power to congratulate the profession upon this operation being successfully performed both to mother and child, in several instances, by Dr. Locher and others. (See Medico-Chirur. Trans. Vol. IX., &c.) In France and other parts of the continent, agreeably to Baudelocque, one hundred and thirty-nine women recovered, out of two hundred and thirty cases. (See Edin. Med. and Surg. Jour. No. VI. New series.)

ten drops of the aqua lauro cerasi was given, and it was repeated in a few hours. The patient passed a quiet night. The symptoms of pain, inflammation, and fever, were threatening for some days, but were promptly resisted by the lancet, by enemata, by narcotics, especially the lauro cerasus, hyosciamus, by fomentations, &c. By the ninth day, the wound had cicatrized, excepting a part near the symphysis pubis; symptoms all favourable.

The lochia were discharged regularly; and in three weeks, she was able to sit up, and in three more was quite well. Early in November she returned home with her child, both in perfect health.

In Ferussac's "Bulletin Universel" for February, another case of the success of this operation is related; it proved fortunate to both mother and child.

1625. We regret we are not more particularly informed of the circumstances which created the necessity of this operation; and especially, the condition of the superior opening of the pelvis; at least as far as could have been ascertained upon the living subject. It may, however, be fairly inferred, we presume, that the diameter of the upper strait was very small, from the great facility with which the child was extracted through the artificial opening made in the uterus.

1626. In addition to these facts, and as a corroborative of the repeated success of the Cæsarean operation, we will extract a case from the "Bulletin des Sciences," &c. for January, 1827. The operation was attended with every wished-for success, though performed on a woman who had suffered upon a former occasion: the cicatrix, however, had always remained rather weak; or more properly, it had never entirely healed, and it continued to be rather thinner than other portions of the uterus; it therefore gave way during labour, and subjected her to the operation of gastrotomy.

1627. Two days were allowed to pass, before this operation was resorted to; it nevertheless proved successful as far as regards the mother, though the child was dead. The following history cannot fail to be acceptable, as the lives of both mother and child were saved by the timely and judicious performance of the Cæsarean operation.

The operator in the following interesting case was Dr. Müller, physician of Löwenburg in Silesia. He was called in July, 1822, to visit a woman who had been two days in labour, and whom

he found it impossible to deliver on account of deformity of the pelvis. She was thirty-three years old, only three feet tall, deformed in many respects, the legs and arms being disproportionately short, the fore arms, thighs, and shins, somewhat crooked, the pelvis flat from before backwards, the chest well constructed. The gravid uterus projected very much. The whole body when he first saw her was bathed in perspiration, and she complained less of labour pains, than of insupportable and continual rending in the lower pelvis. The pulse was very frequent and small; and the waters had been discharged for four-and-twenty hours. On examining *per vaginam*, it appeared that the superior outlet of the pelvis was of the form of a fissure, the length of which from the union of the *os ilium*, and *os pubis* of one side to the other was four inches, and the breadth at each end between one and a half and one and two-thirds of an *inch*, at the middle, between the prominence of the *sacrum* and *symphysis pubis* not above *two inches and a sixth*. The prominence of the *sacrum* gave the outlet the form of a heart posteriorly, and the shape of the anterior margin corresponding with that of the posterior. The *os uteri* had disappeared as usual, and was close upon the upper outlet of the pelvis. The soft integuments of the child's head were pressed as far forward as the outlet would admit of, but the head was not wedged in. The integuments were elastic, and the mother declared she felt the movements of the child.

Natural delivery was manifestly out of the question; and the destruction of the child's head, though practicable, was fraught with danger to the mother, and besides, could not be immediately resorted to because the child was alive. Yet there was no time to be lost, as the woman's strength was greatly exhausted, and farther delay exposed her to the risk of speedy death. The Cæsarean operation, then, appeared to be the only resource of art that remained. The patient readily gave her consent; and Dr. Müller, after the preparatory evacuation of the bowels and bladder, proceeded to perform it in the following manner. At the first incision, he cut through the integuments down to the tendinous expansion of the *linea alba*, beginning an inch below the navel, and ending an inch above the *symphysis pubis*. A small aperture was next made into the abdomen near the navel, the fore and middle fingers of the left hand were introduced into it, and the scalpel being then passed between them, the fingers and instrument were carried downwards till the requisite opening was completed. This was nine inches in length. The

uterus now pressed forcibly forward, and many large vessels could be seen under its glistening surface. A part of the uterus was pinched up, and an incision, as long as that in the integuments would allow, was made through its parietes where they were most free of vessels. Very little hemorrhage followed the wound, and care was taken to sponge all the blood away so long as it continued to flow. As soon as the incision was completed, the child pressed outwards with its feet on the operator's left hand, and was immediately removed without difficulty. It was alive, healthy, vigorous, and weighed seven and a half pounds. The navel string was secured in the usual way, and the placenta soon afterwards was removed by introducing the hand previously cooled in water. During this part of the operation, pressure was made upon the abdomen to prevent the entrance of air into the cavity. The wound was now united by adhesive straps and covered with charpie; a fustian belt was then put on and tightened. At the lower angle of the wound, an opening, an inch in length, was left without straps for the discharge to flow through. Mean while, the uterus was felt contracting in the usual manner, and formed a ball in the left flank.

A good deal of blood issued from the vagina after the removal of the placenta, and again after the dressing of the wound was completed. The patient was directed to remain in the supine posture, and care was taken to make every arrangement before the operation to ensure perfect quiet for some time after it. In the evening, there was some fever, but no pain; and during the night she slept none. Next day the fever had increased, the pulse was very frequent, the thirst unextinguishable, the pain of the lower belly severe and constant, and she had snatches of sleep disturbed by startings; but during the night she slept well. During the third day the fever and pain were moderate, the abdomen a little swelled; in the evening the fever increased; at night she had little sleep. On the morning of the fourth, the fever was again moderate. The wound, which had suppurated, was dressed. In the evening, the usual febrile exacerbation occurred, with increased swelling, but little pain. The straps having become loose, they were carefully removed, and fresh ones applied. The edges of the abdomen were hot, swollen, and florid. The secretion of milk had commenced. At night, the patient slept well. On the morning of the fifth there was no fever, but it returned violently at mid-day, with smarting of the wound, and increased swelling of the abdomen. The fever

moderated, however, in the evening, the lochia began to flow, and the patient again slept well. On the sixth, the abdomen was greatly swollen, the purulent discharge great, the pain considerable, and the lochia more abundant. In the evening her appetite improved, and soup was allowed. The dressings were changed. On the seventh there was little or no fever, her appetite was good, the pain and swelling had abated, and the lochia more abundant. The wound was dressed, and it was found that two inches of it next the umbilicus had healed. From this time suppuration continued so profuse for some days that frequent dressings were required daily. The abdomen progressively diminished in size; the fever was inconsiderable; the appetite strong. On the eleventh, tonics were administered, the treatment having previously been confined to the occasional administration of a clyster. On the twelfth, the milk receded, and the pus had become less abundant, and of firmer consistence. On the sixteenth day there was not above an inch of the wound open; the pus was healthy and moderate in quantity; and the patient was able to sit up a little in bed. On the twenty-second, she was allowed to leave her bed for a short interval; but her debility was very great. For another week she continued to improve; but for a few days after that, in consequence of her having removed to an uncomfortable lodging, and being restricted to an insufficient diet, the wound, which had nearly healed, became inflamed, and a black, fetid, rough, slimy fluid, was discharged from the belly. A change of quarters and diet, together with the use of cinchona, restored her former favourable state of progress; and on the forty-third day the wound was completely closed. Some weeks afterwards, the surface broke out again, but in no long time it was finally healed up; and four years after, Dr. Müller saw her in good health, which, she said, had not suffered any interruption after the healing of the wound. The child died of convulsions when three months and a few days old.

1628. In fact, we may safely add, that in almost every Journal issued of late upon medicine, we find instances of success recorded, of both the Cæsarean operation and gastrotomy. It will be seen, even from the imperfect recital made of the cases just related, that the subjects were not of the most favourable kind for these operations, yet they were followed by every contemplated success.

1629. These facts should be duly appreciated, as they are of

great practical value; since they hold out strong inducements to imitation, when similar necessities present themselves; and they offer resources, by which lives may be saved, under the most disastrous and unpromising circumstances. They, moreover, distinctly contradict the unfavourable reports against these operations, from the British medical writers in general, and of Doctor Osborn in particular. For were it true, as has been asserted by this gentleman, that the woman who suffers it "is doomed to inevitable destruction," it should be proscribed by the profession with one accord, nor should it ever be considered as a resource of the art, under any necessity, however imperious, when the life of the woman makes a part of the calculation.

1630. But, on the other hand, if it be satisfactorily shown, that the success attending the Cæsarean operation, in particular, is at least equal to its failures, (and of which, we think, no rational doubt can be entertained,) it should be regarded with less aversion, or rather viewed with equal complacency, with several other capital operations, in which necessity, rather than very frequent success, is pleaded in favour of their performance.

1631. This is especially necessary under certain conformations of the pelvis—namely, where the antero-posterior diameter of the superior strait is less than two inches and a half. In such a case, we are persuaded, that delivery by the crotchet offers an equal risk to the mother, as the Cæsarean operation, with the absolute destruction of the child.

1632. The Cæsarean section is recommended only when the child cannot be delivered without the mother incurring at least an equal risk from the employment of the crotchet—this being the case, it should be well and satisfactorily ascertained that there is sufficient room to permit the base of the child's cranium to pass without difficulty.* I have already stated (note to par. 1618,) the space I think absolutely necessary to this end; therefore, I should not think it justifiable to sacrifice the child for the bare possibility of its being delivered per vias naturales, and have,

* Now, as this portion of the child's head is always of nearly the same density and bulk, and always, perhaps, retained from its size, it will at once be perceived how difficult and dangerous the attempt must be to transfix or commute it by a sharp-pointed or cutting instrument within the uterus, and above the upper opening of the pelvis, especially as it is not practicable to fix it so firmly as to permit a pointed or cutting instrument to pierce and break it. It was the knowledge of these dangers and difficulties that made M. Baudelocque exert his inventive faculties, and form his cephalotribe, which, it is declared, will break it up into fragments. See p. 578, par. 1611.

if it fail, no alternative but the Cæsarean operation. I must therefore repeat, and it is also the opinion, I am happy to state, of Hull, Hamilton, and Johnstone, that Dr. Osborn has fixed his limit considerably too low.

1633. For what reprehension, indeed I had nearly said punishment, would be sufficiently severe for that practitioner, who, after having destroyed the child, should find it impossible to deliver it; and then, for its accomplishment, subject the poor woman to the Cæsarean section.*

1634. Some have insisted, that this operation should never be performed upon the living woman, let the exigency of the case be what it might—to this Dr. Denman makes the following judicious remarks: "Impressed, perhaps, with the dread of the operation, they did not distinguish between necessity and eligibility, and therefore wished to abolish it altogether, which would be an unnecessary and improper general rule. But if it were to be performed only when the patient was dead, more particularly if we were to wait for her death, as the only proper time of performing it, it would be fruitless. For I do not find any instance of a living child extracted by this operation after the death of the mother,† unless the child escaped by the same stroke as that which proved fatal to the mother, of which the accounts seem to be almost fabulous, or merely accidental. Yet, as in cases of women dying suddenly in convulsions, hemorrhages, rupture of the uterus, or other rapid diseases or accidents, at different periods of pregnancy, or of a labour, it is possible for a living child to be extracted after the death of the mother, by speedily performing this operation; and as no harm can possibly result from the operation, supposing ourselves disappointed, no reasonable objection can be made to our performing it under such circumstances."‡

* This must not be looked upon as a gratuitous position—for the case has occurred more than once. The latest instance we have met with occurred in 1823.

† There are two instances, within a few years, of this operation being performed after the death of the mother with success to the child. One of these was after a flooding. (*Phil. Med. & Phys. Jour.* No. II. p. 189.) The other after death from dysentery. (*Jour. Univers. des Sciences Med.* for Oct. 1822.)

‡ I have been twice called upon to perform this operation after the death of the mother. One had been a flooding case; the other convulsions. In neither did I succeed; owing probably to the great lapse of time after life had ceased in the mother. It should, notwithstanding, always be attempted under such circumstances, as the experiments of Dr. Williams, to determine the exact nature

1635. I might ask, what degree of turpitude, or if any, should attach when a woman is permitted to die, knowing she must die if not relieved, if the only alternative in such case be neglected to be made use of, however hazardous? What is it that renders this operation so dangerous? to this kind of query Dr. Denman remarks—

1636. "In almost every case in which this operation has been performed in this country," (Great Britain,) "the patients have died. It may be of use to inquire whether their deaths were occasioned by any disease with which they were afflicted before the time of labour; were the consequence of the state to which they were reduced from the occurrences of labour, before the operation was performed; or were the inevitable consequences of the operation. In cases of death occasioned by wounds, the following order, in which the danger is produced, may be observed: first, from convulsions, or immediate loss of blood; secondly, from inflammation; thirdly, from grangrene; fourthly, from excessive, or long-continued suppuration, under which the patient becomes hectic. Though almost all the patients on whom this operation has been performed, died, their death happened at different periods; but not one died, either while the operation was performing or immediately after it. No convulsions were brought on by incisions; nor does it appear that any of them sunk through the loss of blood accompanying or succeeding the operation. If we may judge of the cause of death by the time of the patient's dying, it might be said that the death of those who failed within twenty-four hours, was, probably, owing not to the operation alone, but to the violence of this, combined with that of the previous disease; but when they survived twenty-four or forty-eight hours, then their death might be attributed to the succeeding inflammation, in a body predisposed to disease. If we had the liberty of selecting a patient on whom to try the merits of this operation, we certainly should not choose one who was either very much distorted, or who had the mollities ossium, or who was evidently under the influence of some dangerous disease, or who had been several days in labour; because the event must very much depend upon her state at the time when the operation was performed."—Introduction, Francis's ed. p. 424.

1637. Dr. Denman deprecates the conclusion, that he is at-

of the maternal fœtal circulation, prove, that in quadrupeds, the fœtus is found alive a considerable time after the death of the mother: this also is the case, most probably, in the human subject.

tempting "to lessen the general aversion to this operation," and then remarks, "Every woman, for whom the Cæsarean operation can be proposed to be performed, will probably die; and, should any one survive, her recovery might be considered as an escape, rather than a recovery to be expected, though there is always a chance of saving the life of a child. But, as such an escape may happen in any case in which the operation might be performed, we may and ought to esteem every case which can come before us, as the individual case in which a happy event is to be expected. These conclusions will lead us to the principle of necessity as the sole justification of this operation, and urge us, when we do perform it, and as far as may be in our power to select the most eligible time; and from every motive, to exert all our judgment and skill for the service of the patient, as if we were certain she would survive," p. 425.

1638. To this the doctor most feelingly and properly adds, "this operation can seldom be required; and of course never will be performed on the opinion or judgment of any one person, unless in some case of great and urgent necessity; and a concurrence of opinions will afford the best security against its being performed unnecessarily; and if it were to be presumed, by a subsequent measurement of the pelvis, and a new consideration of all these circumstances, that it had never been performed without such necessity; that would prove only that the operation had been abused, and not serve as a valid argument against its use when such necessity really existed," p. 425.

1639. It is not deformity of the bones of the pelvis alone, which may give rise to the necessity of the Cæsarean operation—this cavity may be occupied by tumours, or exostoses, so as to prevent the passage of the child at full time, and which leaves no alternative but their removal, the crotchet, or the section of the uterus. The same reasons which might induce us to have recourse to the Cæsarean operation, under a deformity of pelvis, in preference to the crotchet, would be valid in this state of the pelvis; namely, the impracticability of labour per vias naturales. And, with respect to the removal of the tumours, it may be impossible, or so hazardous as to leave the choice in favour of the Cæsarean operation. See a valuable Chapter on this subject by Mr. Burns, Midwifery, James's ed. p. 35.

a. Mode of performing the Cæsarean Operation.

1640. Having never performed this operation on the living subject, nor ever having seen it performed, I must rely upon the practice and experience of others, for the manner in which it should be done. For this purpose I have examined with care the various plans proposed for this operation; and think that the method proposed by Baudelocque unites more just and rational views than any other I have met with. I shall, therefore, recommend it to be followed, should a necessity present itself for its adoption.

1641. He says, "The Cæsarean operation, like many others, has a time of election, and one of necessity: the latter always takes place when the waters are evacuated, except as circumstances foreign to those which oblige us to operate, present more urgent indications." This necessity is also created, he says, by the woman's sudden death, and the rupture of the uterus. See Chapter on the Rupture of the Uterus.

1642. The time of election is, he thinks, before the rupture of the membranes, and as soon as the labour has begun, provided the neck of the uterus is effaced, and the os uteri sufficiently open to transmit the lochia.* By operating at this time, agreeably to M. Levret, the extent of the incisions, both of the abdominal and uterine parietes, will be less after the child is delivered. For it is very certain that an incision of six inches will affect a smaller number of fibres and vessels, when the uterus is still distended with the waters, than when it is strongly contracted on the child's body, and reduced a fifteenth or a twelfth part of its size.

1643. He recommends two bistouries to be employed; one straight and probe-pointed, and one curved; but this last is not necessary; the common scalpel is better than the curved bistoury —there must be at hand needles, ligatures, compresses, lint, fine linen, brandy, &c. The woman must be placed on a pretty narrow bed, of sufficient height, and the bed should be the one on which she is finally to lie, that she need not be disturbed after the operation. The bed should be so protected, as to prevent its being wetted by the discharges, and when the cloths are with-

* In Germany, the time chosen for the operation is similar to that recommended by Baudelocque; that is, when the mouth of the uterus is opened, and before the waters are discharged.

drawn, to leave the woman dry. She should be laid upon her back, with the legs and thighs extended while the incision is made; and half bent, during the extraction of the child.

1644. He recommends, as do all the best writers upon the subject, that the incision be made in the linea alba: when the part of the abdomen is determined on, the urine drawn off, and the woman properly placed, the abdominal teguments should be carefully cut through, till the aponeuroses which form the linea alba are perceived. The linea alba* must now be cautiously divided,

* It seems from the researches of Dr. Mansfield into the antiquity of this operation, that it is much older than has been admitted by Osiander, Kurt Sprangel, and some others. For he informs us, that in the Thalmud, one of the oldest works among the Jews, and the production of the most learned among that people at that time, this operation is not merely indicated, but distinctly mentioned in the following words: "In a case of twins, neither the first child which shall be brought into the world by *cutting into the abdomen*, nor the second can receive the rights of primogeniture, either as regards the office of priest or the succession of property."

The indications for this operation are not pointed out. Again, in a work called the Nidda, which is looked upon as an appendix to the Thalmud, it is stated, in allusion to the time the husband must abstain from their wives after delivery, that "it is not necessary for the woman to observe the days of purification after the removal of the child through the parietes of the abdomen."

The conclusion is irresistible, that the Cæsarean operation was known at that time; and that it was frequently performed upon the living subject; and more especially as there are several controversies respecting the necessity for women who have suffered this operation to observe the days of purification.

The same authority also proves, that the cutting into the linea alba is not the oldest mode of performing this operation, as supposed by Osiander; but that operating in the side claims the priority, as Maimonides, who wrote a commentary on the Nidda, declares certain words to mean, that "a woman, who cannot bear a child in the natural way, shall be opened in the side, and in this way delivered of her offspring."

The mode of performing this operation, is in the words of Salomo Jarhi, one of the learned commentators upon the Nidda: "The abdomen," he says, "must be opened by Samm, the child extracted, and the parts healed." Samm, in this passage, is said to signify an instrument, which was sufficiently sharp for the division of various parts.

It seems, that, with the ancients, the operation was always performed on the side; and the left was first chosen on account of the liver; but afterwards it was performed on either side, as an opinion may have been entertained of the situation of the placenta. The incision was made on the external side of the recti muscles, and parallel to them; frequently it was carried in an oblique direction towards the pubes. The bleeding which attended this mode of performing the operation must necessarily have been very considerable, from the frequent wounding of the epigastric artery; but yet it is a remarkable fact, that from 1500 to 1769, a space in which, according to Stein, eighty-two Cæsarean operations were performed in this mode, only six turned out unfortunate.

to discover the peritonæum, in which a small opening must be made. A finger of the left hand must be introduced into this hole, and the abdominal teguments a little raised by it to prevent any of the parts within getting injured by the instrument, for which this finger serves as a director.

1645. The first incision must extend from the umbilicus to within an inch or an inch and a half at most, of the symphysis of the pubes. This, he says, is a little longer than it is usually made, but the uterus is better discovered by it, and it can in consequence be opened nearer to the fundus. He thinks the peritonæum is better opened from above downwards, taking care to go along one of the sides of the bladder, when this organ rises up too high, as sometimes happens.

1646. The uterus should be fixed by the hands of an assistant, by pressing a little on the sides, and another make a similar pressure above the umbilicus, in order to circumscribe the uterine tumour, and hinder the intestines from presenting at the wound.

1647. Professor Graafe believes he has diminished the dangers

About the year 1770, some celebrated accoucheurs of Germany and France began to adopt the linea alba as the best spot for the incision. Deleurge was the chief person who showed the advantages which were to be derived from this mode of performing the operation, by preventing the protrusion of the intestines and the loss of blood. Since his time, the linea alba is the spot generally chosen.

Lauverjat soon after recommended that the incision should be made transversely; he performed the operation in this manner twice with success. He proposes to make the first incision between the recti muscles and the spine, just below the third false rib, at the point towards which the uterus projects: other modes have also been suggested.

It is, however, agreed, by all the best continental accoucheurs that neither of the modes proposed as applicable in every case, owing to the structure of the integuments, the situation, form, and projection of the uterus. If structure only be regarded, the linea alba presents the greatest advantages. But advantageous as it is, Dr. Schenk thinks it cannot always be chosen. And the rule now on the continent is, to cut opposite to that part where the projection of the uterus is the greatest.

The reasons assigned for this are, that the integuments of the abdomen lay closer to the gravid uterus, whilst the omentum and the intestines are pressed either above, or to one side, so that an assistant can very readily prevent them from protruding in the way of the operator.

In England, the linea alba is generally chosen for the performance of this operation; and it appears to be the best, as less hemorrhage follows, and there is a greater facility of producing adhesion here than in other parts. With good assistance, it is thought protrusion may always be prevented, by employing large sponges instead of the hands.—*Edin. Med. and Surg. Journ. No. IX. New Series.*

of this operation by the manner in which he conducts it, of which the following is a summary:—The operation should be performed, if possible, at the full period of utero-gestation, and at the time labour has commenced; the incision should be made through the linea alba, below the umbilicus, and should extend five inches; the incision into the uterus should be four inches six lines in length. To prevent the escape of the intestines through the external incision or wound, Dr. G. advises the employment of large pieces of sponge, prepared with wax, each one foot long, six inches broad and nearly three inches thick. Three such pieces are necessary for one operation. They should be applied to the abdomen, so as to leave for the incision a space eight inches long, by three or four wide, and are to be retained by two or three assistants, who should make moderate pressure with the hand; care being previously taken, that every portion of intestine has been removed from the place reserved for the incisions. Pressure on the sponge will then keep the bowels at a distance, and prevent their escape. If the placenta be not completely detached, it should be removed by the surgeon, in preference to its remaining in the uterus. The edges of the wound in the abdomen, should be kept in contact by sutures made with very soft ribands, eighteen lines in width, and with flat needles with two cutting edges. Three sutures, thus effected, are as advantageous as six others with a simple thread. Farther to secure the lips of the wound, four or five adhesive straps are necessary; each eighteen lines in breadth, and long enough to pass once and a half round the abdomen; the middle being applied to the back, and the extremities crossing in front, above, below, and between the sutures. After the operation the mother demands rest, and sedatives, as laurel water, extract of henbane, or the infusion of belladonna, to be administered as an enemata. When inflammation ensues, the loss of blood is the best remedy; salts and calomel do not answer. If nervous symptoms arise, opium, with the ethers, in small and repeated doses are useful, while attention is to be paid to the lochial discharge, and the mammary secretion. In the management of the wound, the sutures, and the kind of suppuration demand attention, especially at the inferior portion of the wound. The adhesive plasters ought to be continued for a long time.*

1648. The abdomen being opened to a convenient extent, a

* The North American Med. and Surg. Jour. No. IX.

little stronger pressure is to be made above the umbilicus, to bring the fundus of the uterus nearer to the superior angle of the wound; it is then to be opened in the middle of its anterior part with the scalpel, until the membranes are discovered. An opening, only large enough to admit the finger, should be made into them, taking care not to wound the child; the forefinger is then to be passed into their cavity, as a conductor for the bistoury, with which the uterus must be opened, cutting from within outwards, as was done with the teguments of the abdomen.

1649. This incision in the uterus must be extended at least as high as the superior angle of the external wound, terminating it below an inch and a half, or thereabouts, above the inferior angle of it. The extent of this incision must be determined in some measure by the size of the child, which is supposed in general to be such, as will, in its small circumference, measure ten, or ten and a half inches. An opening, then, of five or six inches, is generally sufficient; but it is better to make it larger than smaller, to avoid tearing the angles of the wound, when the child passes it.

1650. Should the centre of the placenta present itself under the knife, it must be cut; but if the edge is found in the neighbourhood of the wound, it is better to detach it in order to open the membranes.

1651. When the uterus is properly opened, the hand must be passed into it, and the feet searched for and brought out—proceeding as if a child were to be delivered footling. This rule must be observed, except where the head presents naturally to the wound of the uterus; if it be not expelled speedily by the natural contractions of the uterus, its exit may be favoured, by a slight pressure upon the sides of the belly of the woman, and at some distance from the incision, or by insinuating the forefinger of each hand, under the angles of the lower jaw.

1652. The placenta is soon expelled by the natural powers of the uterus forcing it towards the wound: this may be favoured by gently acting upon the cord, or by taking hold of the edge of the placenta with the fingers, so soon as it may present itself. Care should be taken to remove any coagula that may have formed within the uterus, and a finger passed through its neck, to force any thing that may have formed in it into the vagina. If the uterus remain soft and inactive after the removal of the placenta, it must be gently stimulated externally by the fingers, to oblige it to contract.

1653. But little blood is lost when the uterus is cut in the centre of its anterior face, unless the placenta be attached there, and even then the discharge is but of short continuance, if this organ contract forcibly. A bleeding may supervene some hours, or even days, after the operation—by exciting, however, the tonic contraction of the uterus, it will be put a stop to.

b. Treatment after the Operation.

1654. The general indications presented after the operation, consist, first, in the discharge of any foreign matter from the abdomen, which may have passed into it during the operation: this should be attempted before the wound is dressed, either by placing the woman in a convenient situation, or by pressure applied to the sides above the hips. Sometimes warm water has been injected for this purpose.

1655. The second, is the dressing of the wounds, &c.—the wound in the uterus will require but little attention; since, if this organ preserve its powers, its contraction will lessen it one half, immediately after the operation, and would quickly heal, were it not for the passage of the discharges, which the uterus furnishes so abundantly the first few days after delivery.

1656. The third, consists in preventing or overcoming inflammation: this must be attempted by a strict antiphlogistic regimen, confining the patient to barley-water, thin gruel, tapioca, rennet whey, &c.—forbidding, in the most earnest manner, all stimulating drinks, meat, broths, &c.; in a word, every thing animal, or spirituous, unless some contraindications may exist, or arise: in such case, the patient must be treated agreeably to the judgment of the practitioner.

1657. It is thought by some, that in dressing the external wound, sutures are not absolutely necessary; but surgeons of the highest character think it far the best method for securing the firmest and most solid cicatrix. Adhesive strips will bring the parts very well together, but the flaccidity of the abdominal parietes prevents the exact coaptation that is essential to a firm union. See par. 1647, &c.

1658. It is admitted that sutures have their disadvantages, as they are sometimes obliged to be cut, or at least to be loosened, owing to the distention of the abdomen, or to give transit to coagula. The quilled suture is thought, by some, to be the best; but whichever is employed, care should be taken not to wound

the peritonæum in their formation. Sutures are to be so arranged as to permit the discharge of fluids from the wound; they are, therefore, not to be unnecessarily multiplied.

1659. This wound is thought to require more frequent dressing, than any other penetrating the abdomen, in order to prevent extravasations, and the formation of clots, which the bandage retains within the lips of the wounds; the dressings must be removed daily, or even oftener, if there be reason to suspect either protrusions of the intestines, omentum, or extravasations. The frequency of dressing, however, will be diminished, as the lochia may flow more abundantly through the natural passages. The dressings, agreeably to Baudelocque, should be very simple, and without ointment.

1660. It evidently appears, that there is much advantage in keeping up a free discharge of the lochia, through the os uteri; and, for this purpose, several schemes have been proposed, such as a cannula, or hollow pessary, &c. I do not think this can be either an easy or a useful plan, and that the end could be much better answered by the occasional introduction of a very large-sized bougie; this, I am disposed to believe, would not be attended with much difficulty—but I confess its recommendation is speculative.

1661. It appears, however, to me evident, that some such contrivance is practicable, and may be well worthy the attention of one who may be under the dreadful necessity of performing this operation; especially, as Baudelocque declares it to be his opinion, that clearing the neck of the uterus from time to time, would render the Cæsarean operation more certain. And in an operation of such magnitude and consequence, attention should be paid to the smallest circumstance, if it contribute to render it less fatal.

1662. I have directed the patient to be restricted to the most rigid antiphlogistic treatment, (1656,) wherever there may be inflammation, or even a tendency to it: I repeat it here, that I may say, that with the same object in view, Baudelocque recommends the same plan; but he, unfortunately, in his enumeration of the antiphlogistic articles, reckons veal and chicken broth; both, or either of which, I would most positively forbid. He also recommends, that the patient should suckle her child if it be living; if not, to have the breast drawn by glasses or puppies.

1633. Baudelocque farther says, that "after the perfect con-

solidation of the wound, the woman should never go without a proper bandage, to prevent a subsequent hernia."*

* Since writing the above, I received the following letter from my friend, Dr. W. E. Horner, Adjunct Professor of Anatomy in the University of Pennsylvania. The importance of its contents will amply apologize for its introduction:—

My dear sir:—the Cæsarean operation, as commonly performed, puts in to such danger the life of the mother, that it is still a desideratum to ascertain some modification of it, which may diminish its fatality, and thereby inspire the profession with more confidence and promptness in undertaking it. Several changes in it have been proposed from the time of its first adoption, principally with a view to avoid the chances of wounding the urinary bladder, or of cutting through the large vessels, which, in a state of pregnancy, occupy the broad ligaments of the uterus. In their principle they differ materially from each other, as they all involve the necessity of cutting into the cavity of the peritonæum, on which circumstances, it is generally conceded, the great danger of the operation depends.

This operation has been a frequent subject of conversations which I have held with our common friend, Dr. Physick, and I have been as often instructed by the views which he has taken of it. More than two years ago, it being then a matter of particular inquiry with me, I was struck by the following proposition of his in regard to it, which made a very strong impression on me, and the justness of which I have ever since been extremely anxious to verify by dissection. It is well known to anatomists, that but a very small portion of the upper anterior part of the vagina, in the unimpregnated state, is covered by peritonæum, and that the portion of peritonæum which lies upon the fore part of the cervix uteri and vagina is connected to them by a long, loose, cellular tissue, which allows the peritonæum, in the distentions of the urinary bladder, to be separated still farther up the from the vagina.

It has not been equally remarked, that this peritoneal covering of the vagina is of very fugitive character, and that in the moderate distentions of the bladder, the peritonæum leaves completely the vagina, and applies itself to the bladder. It is also true, that if the distention of the bladder be much increased, the peritonæum even leaves the anterior face of the cervix uteri, and its reflexion to the bladder departs thence at the lower part of the body itself of the uterus.

By a fortunate coincidence, I have at this moment under my observation, these parts about the end of the sixth month of pregnancy; the fœtus having been just expelled from the uterus, with its head still remaining in the vagina, owing to a breech presentation. It may be mentioned in passing, that there is good reason to believe that the uterus here took on the parturient action, after the other phenomena of life had ceased. In this case I find the peritonæum drawn off from the vagina by a common distention of the bladder. And by my drawing moderately at the bladder, the peritonæum leaves the cervix uteri after the same manner that it does in the unimpregnated state.

Dr. Physick, founding his ideas upon a similar observation made in early life, during the dissection of a pregnant woman, proposes that in the Cæsarean operation a horizontal section be made of the parietes of the abdomen, just above the pubes. That the peritonæum be stripped from the upper fundus of the

Sect. V.—*e. On Premature Delivery.*

1664. About the year 1756, as Dr. Denman informs us on the authority of Dr. Kelly, there was a consultation of the most eminent men at that time in London, upon the morality and advantages which might result from inducing premature labour, in cases of deformity of the pelvis. The first case which was judged proper for the trial fell under the care of Dr. M'Cauley, and terminated successfully. Since this time, it has been so frequently repeated in England and elsewhere, as to satisfactorily establish its "morality," "safety," and "utility." This being the case, I shall not enter into its defence, as its frequent success places it above such a necessity; but take its propriety for granted, and merely lay down such rules for its performance, as have been found from experience best, together with a few remarks upon these rules, en passant.

Velpeau speaks both disparagingly and inconsistently of this operation. He first informs us, that the view his brethren in France have taken of this operation, renders it crimnal—for they have dogmatically assumed, that no one has a right to destroy a fœtus at any period of utero-gestation, even (as we suppose) to

bladder, by dissecting through the connecting cellular substance, which will bring the operation to that portion of the cervix uteri where the peritonæum goes to the bladder. The incision being continued through this portion of the uterus, will open its cavity with sufficient freedom for the extraction of the fœtus. All of which the doctor supposes may be done by a careful operation, without cutting through the peritonæum.

It is evident that if this be a practicable operation, it will diminish immensely the tendency to peritoneal inflammation, and will, in fact, put it on a foundation of danger very closely allied to the taking up of the external iliac artery, near its origin, by turning aside the peritonæum; an operation, the success of which is sufficient to justify any competent person in undertaking it.*

Knowing the value which you, as well as myself, put upon the suggestions of a person whose mind is so remarkable for its professional sagacity and resources, I have thought that even a proposition not yet confirmed by actual experience of its success, would not be an unacceptable addition to the fund of information you are about to communicate to the public.

I remain, very sincerely, your friend,

W. E. HORNER.

To Doctor Dewees. *Sep.* 28, 1824.

* Dr. Physick proposes that the operation be performed with a moderately distended bladder, and that a catheter should be introduced previously, to ascertain its situation.

protect the mother's life against the dangerous resources of the Sigaultian section, the Cæsarean operation, embryulcia, or the chance of dying undelivered. For these are the only chances a woman can have, who has a pelvis so deformed as to render premature delivery eligible.

He, however, appears immediately after to dissent from such a conclusion, and observes, "As regards myself, I avow, I cannot put in comparison the precious life of a fœtus of three, four, five, or six months, a being scarcely differing from a plant, one that is bound by no ties to the external world, with that of the adult woman, whom a thousand social relations interest us to save: therefore, in a case of extreme narrowness of the pelvis, and where it was mathematically demonstrated, that delivery at the full period was impossible, I would not hesitate to recommend producing abortion, in the first months of gestation." In this sentence we discover a disposition to aid the woman by destroying the ovum in the early months of gestation. For what purpose is feeling exercised towards the woman but to prevent the use of the terrible resources of art under such circumstances at full time, and thus to save her life—so far, well—but Mr. V. immediately adds: "But it is altogether another thing, when there shall be two inches and a half at least between the pubis and the sacrum: as it has happened that the ovum has been expelled spontaneously, and the fœtus born alive, therefore, the honour of art and of humanity unite in forbidding the use of any instrument, or any other attempt that might destroy the fœtus."

We would ask, what proportion exists, of such *escapes*, to the victims, that such a recommendation of delay, would have? there would be at least a hundred to one, against the child being delivered by the natural agents either dead or alive, and the woman escape from either of the terrible resources for impracticable labour; as the Cæsarean, or Sigaultian, operations, or cephalotomy.

He also declares, that "delivery, when induced previously to the seventh month, will *necessarily kill;* and it rarely fails to cause the death of the fœtus, at the seventh or eighth." Now, this is evidently assuming that which remains to be proved—namely, that the death of the fœtus is inevitable; for we are thoroughly convinced, that children, at an early period, have lived, spontaneously delivered, even as early as, or very little beyond the sixth month; and as this operation offers a much better

chance to the mother at either of these periods, even than embryulcia, which is generally considered the safest of these operations, it should be preferred, were the chances even fewer, in favour of the child. But at present, it is a matter of history, that the operation succeeds; and this with very little danger to the mother; therefore, it is to be preferred in all such cases of deformity as forbid the expectation, or chance, of the child being born alive, by the natural powers. It would be difficult to fix the exact opening of the small diameter of the superior strait, and at the same time be able to determine the extent of the transverse diameter of the child's head. Therefore, we can only make a general, or average estimate, of these diameters, as disease may change the structure in one, or as development more or less rapid or perfect may affect the other. Agreeably to Dr. Ramsbotham, already quoted, the following rules may be permitted to govern: "if the conjugate diameter measure $2\frac{3}{4}$, or 3 inches, we may allow pregnancy to advance to the end of eight months; if $2\frac{3}{4}$, or rather less, to seven months and a half; if $2\frac{1}{2}$, it must not proceed beyond seven months; if less than $2\frac{1}{4}$ inches, it would be unsafe to delay beyond the seventh month; and I would be inclined to induce labour rather sooner, because children have been reared at an earlier period."—*Gazette, p.* 437.

In another sentence, Mr. V. asks the following extraordinary question—"If it must be destroyed, (the child,) why not wait to the full period? by doing so, we shall not destroy the few chances we have, of seeing a favourable termination of the labour." We are led to infer from this question, that Mr. V. thinks there is less danger from embryulcia at the full period of utero-gestation, in cases, where the embryo (agreeably to his phraseology,) *must* be destroyed, than even at an early period of pregnancy; a circumstance, in which he will not, we think, be borne out by any other practitioner—and for these especial reasons. First, if premature delivery be induced even after the sixth, or a little before the seventh month, the child *must not, nor does not, necessarily perish.* Secondly, that after the seventh, and from that to the eighth month, the chance for the child is increased, provided the diameter of the pelvis has justified so long a delay. Thirdly, because, if the case require the puncture of the ovum, it would be folly to wait to the term of labour, in expectation of any one chance "of a favourable termination of the labour," since the size of the child's head, if alive, and this is taken for granted, must necessarily increase the longer it remains in the uterus—for

we may well ask in turn, how the chances for "a favourable termination" are increased, by a delay that will increase the evil, that renders the induction of premature delivery necessary; namely, an increase of disparity between the size of the child's head, and the pelvis! Is this condition not admitted, (namely, that the head continues to augment in size,) when he says, "If with a view of greater security (of the preservation of the child) the operation be deferred a fortnight more, what assurance can we have, that the head is not too large already, to pass through the straits? Traité Elementaire de l'àrt des Accouchemens. Tom. II. p. 807, &c.

1665. Dr. Merriman has summed up within a very short space the laws which should govern in this case, which I shall introduce, with a few remarks.

1666. "I. As the primary object is to preserve the life of the child, the operation should never be performed till *seven complete months* of utero-gestation have elapsed; and, if the pelvis of the mother be not too much contracted to allow of it, the delay of another fortnight will give a greater chance to the child surviving the birth."*

1667. There has always been a considerable difficulty in ascertaining with precision the degree of opening of the superior strait. None of the inventions for this purpose can, perhaps, be sufficiently relied upon, to remove all doubt upon the question; I am, however, of opinion that the calipers of Baudelocque are the best for this purpose, (79.) If the subject have been previously a mother, the size of the pelvis may have been pretty nearly ascertained during the progress of the labour: if she have

* Dr. Merriman says, "of forty-seven cases of premature labour, induced on account of deformity of the pelvis, nineteen have been born alive, and capable of sucking."—Med. Chirurg. Trans. Vol. 3, p. 123. Dr. Hamilton, of Edinburgh, says, that of twenty-eight cases of induced labour, twenty-four children were saved!! We must take this proportion as being unique, and peculiar to this gentleman; for, we believe, there is none other instance of success equal to it. Dr. F. H. Ramsbotham says, that much greater success has attended Dr. H's. exertions than he can boast of; but admits, that in more than one half of his cases the children were born alive, and might live to maturity. He performed the operation forty-seven times in twelve years. And lest this large number should startle or challenge belief, he states, that "the extensive charity that supplied the principal part of these cases, embraces the districts of Spittlefields and Bethnal-Green, which parishes contain more deformed pelves than are to be met with over the same quantity of square acres than any other part of this kingdom, (Great Britain.)

not been, it will be necessary to employ the finger, &c. to ascertain its condition as nearly as may be.

1668. It would seem to be a rule founded upon experience, that no advantage would be gained by this operation, in a pelvis that had not two or two and a half inches complete, in its antero-posterior diameter, because a child at seven months would require an opening of that size to permit it to pass;* and it has been almost universally supposed, that a child which had not tarried "seven months complete" in the uterus, would not live after its delivery. This certainly must be considered as a valuable, general rule: and if the state of the pelvis admit of farther delay, it would unquestionably be to the advantage of the child.

1669. But what shall be done with such women whose pelves have rather less than two inches? shall they be abandoned to the Cæsarean section, or their children to the crotchet? either of these alternatives is certainly terrible; and if nothing better present itself, must be submitted to. It may, however, become a profitable inquiry, to determine (from what has really happened upon other occasions,) the propriety of inducing labour at an earlier period than seven months; say at six. Children have lived when delivered at this period, where there was no deformity of pelvis to contend with, (but this circumstance, it is true, may occasion a different result,) and it perhaps would merit a trial in cases of more excessive deformity; since, neither mother nor child can have any greater injury offered them, than the dreadful operations just named. I have witnessed two instances of children living, (one, indeed, at this moment alive, arrived at womanhood, and mother of children, and the other lived several months,) the mothers of whom were, as far as could be ascertained, not more than six months advanced in gestation. "Mr. I. T. Cribbs relates the case of Mrs. R., aged forty years, the mother of several children, who was taken in labour November 2d, 1827. Her last menstrual period was on the 15th of April, so that she could not be advanced more than twenty-eight or twenty-nine weeks. The labour continued, and the ovum was expelled entire, the membranes not having been ruptured, but still enclosing the fœtus and liquor amnii. On breaking them, the child was found living, and perfectly formed. It was able to take the breast in a day or two. The child at six weeks old weighed two pounds and two ounces; at ten months its weight

* Madame La Chapelle has ascertained, that the transverse diameter of the child's head rarely or never exceeds three inches, and may be much less, (1666.)

was twelve pounds. Although 'very weakly,' it is able to stand when leaning against a chair, and its health is not bad."* Indeed, the account which Fortunatus Licetus gives of his own birth, which was at between the fourth and fifth month of gestation, may be given in evidence upon this subject, as it does not appear to be treated as fabulous by the writers on medical jurisprudence. In the case of Cardinal de Richelieu, it was decreed by the parliament of Paris that a child was "viable" at the fifth month. And Hippocrates has admitted that a child might live at six months and a few days. The rule of viability, if we may so term it, should be taken from the energy of the vital powers of the child, rather than from the term of utero-gestation. And I would be understood by the term *viability*, the capacity to sustain life, rather than the mere signs of this condition, by feeble cries, and languid movements of the limbs—for these may be exhibited by an abortion of the fourth or fifth month, but they will not, perhaps, possess the capacity for future development at this early period. I say perhaps—for I would not wish to be thought to call in question the veracity of such authors as have declared in favour of this early date. My present impression is, and has been for many years, that children who have remained alive in the uterus until the sixth month, might, under favourable circumstances of labour, &c. be very often raised. This opinion is strengthened by a case which has lately occurred under my care.

Mrs. B. was prematurely delivered on the 26th, July, 1831, after a labour of very moderate force of six hours. She supposed herself advanced beyond the seventh month. When the fœtus was born it showed but feeble signs of life—it moaned rather than cried. It was not more than nine inches in length; and it would not, I think, have weighed more than, perhaps, eight, but certainly not more than ten ounces. I had it enveloped in a pretty thick covering of carded cotton; its lips were frequently washed with sweetened water, and occasionally a little rennet whey was put into the mouth, which after a time it would swallow. The meconium was purged off by the use of a little molasses and water. About the twelfth day it was put to the breast, which, after repeated trials, it was found it would draw feebly: this power, however, gradually increased, so much so, indeed, that at the beginning of the third week, it sucked very well. At this time

* Lond. Med. and Surg. Journ. for November, 1828.

I permitted the nurse to put a fine flannel dress upon it, and remove the cotton. This day it is four weeks old—it is much improved in flesh, strength, appetite, and appearance—in a word, it gives every hope, that it will continue to thrive and do well. The successful issue of this case, so far, may be justly attributed to the fostering care of the friends of the child, and its nurse; and the entire exemption from the fatigue of dressing it.

1670. Dr. Hamilton's rule of "viability" being determined by weight, is altogether hypothetical—his minimum weight very considerably exceeds what we have witnessed. Now, one of the children alluded to above, weighed at six weeks old, clothes and all, but one pound and three-quarters.

1671. It might be worth the trial, in cases where the choice is so limited, as to leave no alternative, but the crotchet or Cæsarean operation. I am fully aware of all the contingencies attendant upon the proposition, yet it seems to hold out a remote chance to the child, without increasing the risk to the mother. I know full well how frail and tender the whole organization of the fœtus is at this period; and how many dangers await its delivery; but with me, they are not of sufficient force to destroy the *possibility* of success; for the extreme pliability of the cranial bones at this period gives promise that the head may pass without the brain receiving so much injury, as to forbid all chance of usefulness from the operation; and if it succeed once in twenty times, it is certainly better than opening the head always; or subjecting the mother to the other dreadful alternative.

1672. "II. The practice should never be adopted, *till experience has decidedly proved*, that the mother is incapable of bearing a full-grown fœtus alive."

1673. "III. It is sometimes necessary to have recourse to the perforator in a first labour, though there may be no considerable distortion of the pelvis; therefore, the use of this instrument in a former labour, is not alone to be considered as a justification of the practice."

1674. "IV. The operation ought not to be performed when the patient is labouring under any dangerous disease." And I would add, any very acute disease, if not absolutely dangerous.

1675. "V. If, upon examination, before the operation is performed, it should be discovered that the presentation is preternatural, it might be advisable to defer it for a few days, as it is possible that a spontaneous alteration of the child's position may take place; particularly, if the presentation be of the upper extremities."

1676. I have introduced this rule, because I am not certain that it may not be an important one; but to me, reason and experience seem to be against the fulfilment. Reason is against it; because, the length of the child from the points of the nates to the top of the head, would exceed the transverse diameter of the uterus; and, therefore, it could not perform the movement called the "Somerset," which would be essential to such a change of parts. See Baudelocque, on the movement, called "Somerset."

1677. And experience, I am disposed to believe, must also be against it, since before the rupture of the membranes at full time, and when the mouth of the uterus is even pretty well dilated, it is very difficult sometimes to determine the part which may offer to the finger—I believe that no accoucheur, at full time, would positively pronounce on the part which may present itself to the os uteri, when the os uteri is but little expanded, and the membranes entire. And if he cannot at full time, when it must certainly be less difficult, and less hazardous, how can he, without a prodigious risk of being mistaken, decide at seven months, when the neck of the uterus is not effaced; and when it requires some force to pass the finger; when it must be passed with great care and delicacy, that the membranes be not ruptured; and where, did we employ a pressure sufficient to determine the nature of the presenting part, the membranes would almost certainly give way? I ask, under all these disadvantages, how can we ascertain with so much precision, as would render the examination free from doubt as to the suture that may offer to the finger? Dr. James gives us an instance in point, as regards the delicacy that is necessary in this examination: in this case the membranes yielded, by some little damage being done to the membranes by a previous examination. See his interesting case, Eclectic Repertory, Vol. I. p. 105.

1678. An anonymous writer in No. II. of Vol. V. of third series of the New England Journal, has also questioned the possibility of ascertaining the precise nature of the presentation: or he rather declares, that "it is not very easy to do it, even in the earliest hours of a labour which takes place at the usual time, and after its most natural manner. Is it not then to be looked upon as almost impossible in the case supposed, (of premature labour artificially induced,) where the os uteri, having been opened merely by the finger, or a passage through it effected by a small instrument as far as the membranes?" But, he adds, "it

is not questioned that Denman, Burns, and Merriman, ascertained the presentation in the cases in which they waited before they broke the membranes."

1679. I am, however, far from conceding so much to the tact of any man under such circumstances; and for the reasons just stated. And, I may add, that in my opinion, it would be altogether impossible to discriminate between the head and the breech; or between the feet and the hands. Besides, it would be altogether unavailing to any useful end, to wait for a favourable change, were the presentation ascertained to be a preternatural one, agreeably to their acceptation of the term; as well as unnecessarily losing very important time; for I agree perfectly with Baudelocque, and Ramsbotham, that the change called the "Somerset," cannot take place after the sixth month of pregnancy.

1680. I have insisted upon this view of the subject the more, because the recommendation of delay comes from very high authority; as well as from the most entire conviction that if it were acted upon, the moment for a successful operation would pass, not to return again.

1681. "VI. The utmost care should be taken to guard against an attack of shivering and fever, which seems to be no unusual consequence of this attempt to induce uterine action, and has often proved destructive to the child, as well as alarming with regard to the mother. The peculiar circumstances under which the operation is performed, and the habit of body of the patient, will determine the accoucheur either to adopt a strictly antiphlogistic plan, or to exhibit opium or antispasmodics and tonics.

1682. "VII. In order to give every possible chance for preserving the life of the child, it will be prudent to have a wet nurse in readiness, that the child may have a plentiful supply of breast milk from the very hour of its birth."

1683. The last direction would seem to intimate, that the woman who has undergone this operation, is incapable of nursing the child after it is born—but this is certainly not so always. I have seen as abundant flows of milk after premature, (spontaneous, if I may so term them,) labours, as when the child was carried to the full time. Nor do I see any good reason, why an immature child should suffer more than a mature one, for the want of "breast milk" for a few days—yet the caution may be useful.

1684. "Lastly. *A regard to his own character, should determine the accoucheur not to perform this operation, unless some other respectable practitioner has seen the patient, and has acknowledged the operation as advisable.*"

1685. It is not necessary to describe the mode of operating in this case; for, as Dr. Denman very justly observes, "No person properly qualified to decide on the propriety of this operation, can be ignorant of the manner of performing it." He cautions against injuring the child in this operation—this cannot happen, if a blunt instrument be used instead of a sharp one. Dr. Campbell suggests with much good sense, that the less compression the child suffers in transitu, the less will be the risk it may suffer from uterine compression; and with a view to diminish this, recommends, that the membranes should only be separated from the uterine parietes, by means of a large catheter, or the finger of the practitioner, as may from circumstances prove most convenient, instead of rupturing them, affirming that this operation will ensure uterine contraction as certainly, if not as speedily, as expending the liquor amnii, by puncturing the ovum. Ed. Med. and Sur. Journ. for April, 1830. p. 315.

Professors Lovati and Belli, recommend the introduction of the sponge-tent, into the neck of the uterus, by means of an appropriate cannula or tube, gradually augmenting the size, about once in four or five hours, until the neck is sufficiently dilated; at this time and even before, pains come on and the labour progresses unto its final issue. Professor Lovati relates two interesting issues; so that, in Italy, this practice is fully sanctioned by the above named professors. But we should prefer, were a case to offer itself to us, the plan just recommended by Dr. F. H. Ramsbotham, namely, the exhibition of the ergot. He relates six cases in which the labour was induced by the infusion of the secale cornutum. His mode of exhibition is to pour eight ounces of boiling water on three drachms of powdered secale cornutum, and simmer it for half an hour; strain, and give two table spoonsful every four hours, until the uterine contractions are produced.—*Lond. Med. Gaz. Vol. XIV. p.* 434.

After admitting so much in favour of premature delivery, in cases of such a degree of deformity as will not admit of the delivery of the child, without mutilating it, or subjecting the mother to hazardous operations; we should candidly confess the risks and difficulties that surround the necessary operation, especially to the child. For this exposition, we copy, with much

pleasure, the temperate and rational details of Dr. F. H. Ramsbotham, as detailed in the 14th Vol. p. 406, of the London Medical Gazette. "Difficulties attending the object. The difficulties with which we have to contend with, in endeavouring to save the child, under the proposed plan, are certainly great; and the following may be enumerated: First, The pressure on the navel-string may destroy its existence, as advanced by Baudelocque. There can be no doubt, that as long as the membranes are whole, however strongly the uterus may act, the pressure in the fœtal body and funis is inconsiderable, owing to the quantity of fluid the womb contains. But as soon as the water is evacuated, when the parietes of the uterus come into close contact with the body of the child, it is very possible that the funis umbilicalis may suffer such injurious compression as to destroy the child's life; and this will, therefore, be looked upon as one of the chances militating against success.

Secondly, "Children are more frequently found to present in a preternatural position previously to the termination of gestation, than after the full time is completed. At a particular period of pregnancy, the fœtus assumes a definite posture, from which it seldom varies. What this precise period is, I have no direct means of judging; probably, it differs much in different cases; but the fact is undoubted, that *cross births* are more frequently met with under the premature labour, either spontaneous or artificial, than in full-timed pregnancies.

Of thirty-three cases which came under the knowledge of Dr. Merriman, in which premature labour was induced, fifteen presented preternaturally, and only one of these children was born living.

"The same observation, I myself made, though the proportion has not been so large; for, of the forty-one children just alluded to, fourteen presented preternaturally; and Dubois has recently stated, that in the *Maternité*, at Paris, out of one hundred and twelve children, born before the completion of seven months, in fifty-one cases, the pelvis offered itself, and in five, the shoulder; making a total of just one-half preternatural presentations. Thus, then, if the shoulder or breech present, we shall have little chance of saving the child; because, besides the ordinary cause of danger,—the pressure on the funis umbilicalis must be great when the head is passing the brim; for, I presume, on there being a want of space to warrant a recourse to the means used. Mr. Barlow, indeed, states, that preternatural presentations are

more frequently met with under distortion of the pelvis, than when that organ is well formed. His is a good practical authority, and this remark also coincides with my own observations. Until I became acquainted with Mr. Barlow's opinion, I looked upon this as an accidental occurrence; and I do not yet know that it is regulated by any precise laws.

"The *third* difficulty we have to contend with, is the chance of deception regarding the period of pregnancy, at which the operation is performed. Women are very liable to be deceived in their reckoning; they may fancy they have advanced farther than is really the case, and their representations may induce us to bring on uterine action before the fœtus has acquired such a degree of perfection, as to enable it to sustain independent existance—or, on the other hand, the patient may have been pregnant before she was aware of it: and we may delay the operation until it is too late, until the child is of too great bulk, and too strongly ossified, to pass through the particular pelvis the woman possesses; and we may, consequently, in the end be compelled to resort to the operation of craniotomy; as has occurred to myself in one instance. Though these difficulties, then, are some drawback to the success of inducing labour prematurely, yet they are, by no means, such as would induce us to discard the benefits it holds out.

Sect. VI.—*f. Section of the Pubes.*

1686. I should not have enumerated this operation as one of the resources of the art, but to have it in my power to declare it not to be one—and though the operation has been performed twice, lately, with success, it is said, (that is, the children were born alive and did well, and the mothers recovered;) yet it is evident, from the relation of the cases, there could have been no very great deformity of the pelvis, or much room to applaud the operator for his "success." For after the operation, the patients were placed in warm baths, and the farther separation of the bones and dilatation of the parts were left to the efforts of nature. On delivery, the bones were found separated an inch and a half, a proof that there could not have been much restriction of the superior opening of the pelvis, as a separation of even two inches gives, as a general result; but six lines, or half an inch, in the antero-posterior diameter of the superior strait; therefore, less than half an inch must have been obtained in the cases just mentioned; yet with that additional capacity, the wo-

men were enabled then to deliver themselves; consequently, there could have been but little deformity.

1687. Besides, it is stated, that in one of the cases no reunion of the bones took place, owing, it is supposed, to their not having been placed in apposition—this being so, one of two things must account for the defect; either that the operation must have been most bunglingly performed, not to have secured the bones in apposition; or, if this be not admitted, there must be a risk of union not taking place, however well performed.

1688. But as some have thought I dismissed this subject by too briefly noticing it; and especially, as the cases glanced at above were instances of success, I have, in compliance with the opinions of some friends, whose opinions I respect, given the cases alluded to as fully as I could, and have followed them with some observations upon the operation, which should be known to those who might be seduced to perform the section of the pubes from the success which followed it in Dr. Manchini's hands.

1689. Dr. Manchini, professor of anatomy at Naples, has lately (1824,) performed the section of the pubes in two instances, and, as he says, with success. In both of these cases it was declared, in consultation, that "the delivery could not be effected by the natural process. In both instances the children were born alive, and did well, and the mothers recovered. After the operation, which consisted in a simple division of the symphysis, the patients were put into a warm bath, and the farther separation of the bones and dilatation of the passages left to the efforts of nature." The reporter says, "I do not know exactly what time was necessary for this purpose, in the first instance; but, in the second, the delivery was accomplished in eight hours after the operation, when the divided bones were found to have separated an inch and a half from each other. The parietal bones of the child's head overlapped each other very much, and the whole cranium was brought into the form of a cone, from the pressure it had sustained in effecting a passage through the openings, which were still narrow."

1690. "In the first case, no reunion of the divided parts took place, owing to their not having been brought into apposition after the delivery; from which circumstance the power of walking has not been recovered, but is performed in a straddling manner. In the second case, the parts were brought together after the accouchment, and retained in their natural situation by means of rollers

properly applied; the bones united, and no inconvenience of any kind was afterwards experienced."*

1691. I have thought proper to record these cases, as they have been received with much complacency by a number of the profession, and considered as confirming the opinion of the safety and propriety of this operation, as promulgated by Sigault and others, when it first came into vogue. At that period it was considered as a real and important improvement of the mechanical means of terminating such labours as appeared to offer no alternative, but the Cæsarean operation. Baudelocque attacked these opinions with great force of argument, derived principally from well-directed and convincing experiments upon the dead and living subject.

1692. The idea of this operation was first suggested by a passage in the works of Severin Pineau, to M. Sigault, while a student of medicine, in 1768, and was first performed by himself in 1777, with success.

1693. It was originally intended to supersede the Cæsarean operation in such cases as was thought could only be terminated by that method. But its partisans soon employed it in cases where patience or a well-directed choice of other means might have succeeded; and consequently, it was often unnecessarily, if not wantonly performed; for we are informed, that it was had recourse to more frequently in the period of four or five years, than the Cæsarean operation in twenty or thirty, or even in half a century. In a word, Baudelocque says, "that the whole art of midwifery was reduced, so long as the delirium continued, to a dexterity in performing this operation; its partisans ventured to publish, that the operation itself was a trifle; and that every thing depended upon the subsequent treatment."

1694. It was, however, very early shown, especially by Baudelocque, that the original suggestion of this operation by M. Sigault, as a substitute for the Cæsarean section, was founded in error; for the latter operation is only proposed, where it is physically impossible, that a child at full time can be born alive; or to reduce it to greater precision, where there is less than two inches, and three-quarters in the antero-posterior diameter of the superior strait. Now, as there are constantly deviations from the measurement just named, to that of a few lines, it must follow, that there must be gained an increase of diameter, equal

* Anderson's Quarterly Journal, Vol. I. No. 1, p. 149.

to the space admitted above, that the operation shall be successful. This being granted, (for it cannot be disputed that M. Sigault proposed his operation as a means to save the life of both mother and child,) it only remained for the opposers of his plan, to show, first, the greatest possible increase of diameter that can be obtained by the separation of the ossa pubis; and, secondly, the least possible diameter to which the head can be reduced with safety.

1695. It was accordingly shown by Baudelocque and others, that the greatest possible gain by this operation in the antero-posterior diameter of the upper strait, on the dead subject, is from five to six lines French, or about half an inch English; and, consequently, insufficient in many instances for the object for which it was instituted; namely, to preserve the lives of both mother and child. It was also shown, that the transverse diameter of the child's head would not bear with impunity a reduction below three inches, or a very few lines less than its natural diameter; and of course, that this operation would fail, when the antero-posterior diameter could not be increased to at least three inches. For it is well ascertained, that the ordinary diameter of the child's head from one parietal protuberance to the other, is rarely less than three inches and a half, in a full grown fœtus.

1696. These powerful objections were early urged against this operation; and without taking into calculation at that time the mischiefs that might accompany it, as these were to be tested by farther experience. A short period, however, served to prove, that almost every operation had a victim, as the life of the child was rarely preserved, and the mother very often fell a sacrifice.

1697. Frequent opportunities presented themselves in the Hôtel Dieu of Paris, in consequence of the prevalence of a very fatal epidemic, to ascertain with every necessary precision on the dead subject, the space that could be gained by the division of the pubes. The following is Baudelocque's account of the experiments made by himself and others at that time.

1698. "The subject being placed upon a table, the thighs moderately separated by two assistants, the ossa pubis receded from each other, from three to six lines, the instant the section was made. It was not without carrying the thighs forcibly outwards so as to make them in several of the women describe right angles with the trunk, or the form of the letter T, that

we could obtain a separation of two inches and a half; and even then we were obliged to pull the hips in the same direction as the inferior extremities. That separation was not obtained in any one instance without tearing the sacro-iliac symphyses, and that tearing, which began sooner or later, was more or less considerable, according to the particular form of the pelvis on which we operated, and as the symphyses themselves were more or less supple.

1699. "In a pelvis whose superior strait had but three inches and a quarter in the small diameter, and five inches transversely, the ossa pubis were scarcely separated an inch, before one of the sacro-iliac symphyses appeared open a line and a half, and the other only a line. The separation of the former augmented to five lines, and that of the latter to three and a half; the periosteum detached itself from the bones to a considerable distance, and their anterior ligaments were torn long before the ossa pubis were separated two inches and a half. In another experiment on a pelvis of four inches seven lines in the small diameter, and four inches and three-quarters in the other direction, the ossa pubis could not be separated twenty-one lines without detaching the periosteum from the sacro-iliac symphyses, and tearing it an inch before them. The symphyses themselves were opened so far as to admit the end of the finger, and in the sequel separated so as to receive the end of the thumb with ease.

1700. "The external wound, which was two inches and a half, was torn in all these cases, as well at the superior as at the inferior angle; and sometimes to the extent of several fingers' breadth.

1701. The experiments of Ripping, Serin, Chevreal, Desgranges, Siebold, &c., were generally in strict conformity to those of Baudelocque and his friends, and tended very much to support them. The combined results of these trials, prove undeniably, that the small diameter of the superior strait cannot be increased beyond four or five lines, even when the ossa pubis are separated two inches and a half, which cannot destroy the disproportion, as we have already said, which exists between the child's head and the pelvis in the cases for which this operation was originally proposed, if even this degree of separation could with safety be obtained on the living woman.

1702. Besides, Baudelocque very justly calls in question the necessity of this operation in some of the cases in which this

operation was said to triumph, by rendering it very much more than probable, that the openings of the superior straits, were considerably greater than those ascribed to them; consequently, the degree of enlargement procured by the section of the pubes was exaggerated. And this was confirmed, in a number of instances, by the woman who suffered the operation being delivered previously or subsequently, without adventitious aid.

1703. Though the section of the pubes purports to be a safer and an easier operation than the Cæsarean, it is not found to be so, in general. That it has been occasionally successful as regards the mother and child, must not be denied; but it would seem, in all these instances, to have been performed when this operation was not absolutely necessary; or when the milder and safer operation of premature delivery would have been the better mode of treating such cases. Even after an increase of diameter is procured by the section of the symphysis pubis, there is no security, that much after-difficulty will not present itself; for the delivery has been afterwards effected by forceps and other means, without entire safety to the child; for in most instances, it was either still-born or died very soon after its delivery.

1704. But were it admitted, that the necessary room can be procured when all the parts concerned are favourably disposed, it is very far from certain, that this will obtain in the majority of cases. For it has been found absolutely necessary to use the saw for the separation of the symphysis, owing to its unnatural consolidation; and it has occurred that, when the division has been made, that a separation of the extremities of the divided bones could not be procured, in consequence of the ossification of the sacro-iliac symphyses. Now, we are informed, that this condition of these parts is not very rare; but it cannot be known, until after the operation has rendered such knowledge useless.

1705. This operation, as a general rule, is very far from being safe to the child; for out of thirty-three operations, but thirteen were saved: all the others died, either before the operation, or during the extraction; and it must be remarked that the children which were preserved, belonged to women whose pelves were the least deformed; consequently, this operation cannot, as regards the child at least, be considered as a substitute for the Cæsarean section.

1706. The evils of this operation, however, are not confined to the child; the mother also is often a severe sufferer: for when the deformity is extreme, she is sure to die. Of the thirty-three cases

just noticed, twelve evidently died of the consequences of the operation; and of those who survived, the greater number had been delivered naturally before, or safely delivered since; while several always remained infirm.

1707. Beside the grave evils just enumerated, there are many of a minor kind, which are every way worthy of consideration, since they but too often have entailed misery upon the unfortunate females who were the subjects of the operation. Among these may be mentioned all the inconveniences which must follow the separation of the cartilages from the ossa pubis, and the iliac junctions;* irremediable sloughings from the neck of the uterus, and the external parts; collections of pus, or sanies in the cellular tissue of the pelvis; hernia of the bladder between the ossa pubis; extravasations in the psoæ muscles; injury to the urethra; incontinence of urine; gangrene, &c.

1708. We may also with much propriety notice the evil which followed one of the cases, which gave rise to the present observations; namely, the incapacity to walk firmly. And though it is expressly stated this arose from neglect, it is nevertheless one of the penalties of this operation; for we hardly dare admit that an operation of such moment could have been conducted with such reprehensible carelessness.

1709. From what we have said upon the subject of the section of the symphysis, we may safely draw the following important conclusions:—

1710. First. That it can never be a substitute for the Cæsarean operation, except the pelvis to be operated upon, has two inches and three-quarters in the antero-posterior diameter; and even when it possesses this capacity, it is certainly more dangerous both to mother and child, than premature delivery, when the choice is at command.

1711. Secondly. That this operation is almost necessarily fatal to the child, where the deviation is very little below what we have just stated it should be, to render this operation even probably safe.

1712. Thirdly. That in every instance in which the ossa pubis have been separated two inches and a half, it has proved fatal to the woman, and not always safe to the child.

1713. Fourthly. That it has not been always safe where the antero-posterior diameter has had two inches and a half, nor always successful when the opening has been more ample, or in

* See Chapter on Separation of the Bones of the Pelvis.

other words, even where it should not have been performed, because it was not indicated.

1714. Fifthly. When more than five or six lines have been procured in the little diameter of the upper strait, it has always been upon the dead subject, and always at the expense of the unions of the ilia with the sacrum; and would consequently be fatal to the living subject; for more than two or three lines cannot be procured in this direction without serious inconvenience.

1715. Sixthly. That this operation should never be performed, when advantage can be taken of delivering at the seventh month, in a pelvis, whose diameter at the superior strait shall have two inches and a half, or upwards.

1716. Baudelocque concludes his inimitable analysis, by saying, "the section of the pubes cannot, at present, maintain any comparison with the Cæsarean operation; at most, it might be substituted for the forceps, in some particular cases only; for it cannot, without great inconveniences, give an increase of more than two lines from the pubes to the sacrum, superiorly; and that instrument may, without danger, reduce the diameter of the child's head that much. But what practitioner would prefer a new operation, which seems to be surrounded by rocks on every side, to one that has been crowned with a thousand successes? If we allow the former any advantages, they would never be more evident than in that species of locked head mentioned by Rœderer, where we cannot, says he, introduce any instrument between the head and the pelvis, at whatever part it may be attempted; in this case it would merit a preference over opening the cranium, the use of the crotchets, and the Cæsarean section, as proposed by the same author; it would be preferable, also, where the inferior strait is contracted *transversely*, provided a small separation were sufficient to give that diameter the necessary extent."

1717. The doctrines here taught, are in strict conformity with those inculcated throughout the works of this very able accoucheur; but they will nevertheless fail to be guides to very many of the profession; this diversity will arise from several causes. First, to the estimate which will necessarily be made of the value of the child's life, and the risk the mother would run from the section of the pubes. Secondly, to the capacity the practitioner may possess of performing the operation. Thirdly, to the influence of public opinion. Fourthly, to the force of education.

1718. In the cases which have given rise to these observations, Dr. Manchini pursued a novel plan after the operation; namely, placing his patients in the warm bath. We are not prepared to say how far this step may have contributed to the success of the enterprise; though disposed at first sight to believe it may be a great improvement, in cases where the acquired room has been sufficient to permit the child's head to pass without additional force, and where the pains continue with force and tolerable regularity. We would think it might be useful, in such cases, to administer the ergot, where the contractile force of the uterus is found to flag, rather than to call in the use of the forceps, or other foreign aid. For one of the causes above related is instructive; it teaches us, that the child may be born alive, by waiting patiently a few hours. Had these cases come to us more in detail, they might perhaps have been more instructive.

Sect. VIII.—*g. Regimen.*

1719. It was long taught, that the child was entirely dependent upon the mother for its nourishment while in utero; and that for the increase of the body, it was constantly necessary to have a supply of it; that this increase of the body was in proportion to this supply; and consequently, the ingesta of the mother must have a decided control upon the size of the child—hence, a woman with a deformed pelvis, has been advised to live very abstemiously with a view to diminish the size of the child. This speculation was both natural and ingenious; and there is perhaps but one argument against it; namely, that experience has not proved it to be well-founded. This scheme, therefore, is now, entirely, I believe, abandoned. Dr. Holcombe, however, has lately revived it in a letter to the author, where he has related several instances of success from a combination of diet and medicines, in considerable deformities of pelvis; and as every thing which has a tendency to preserve life, to diminish danger, or to alleviate the sufferings of child-bearing, must be highly interesting, I trust we shall be doing an acceptable office, in transferring the Doctor's observations on this important subject to our pages, in his own words.

"Regimen is another subject but briefly noticed in your work. In the short chapter which you devote to it, you merely observe, experience has proved, that lessening the quantity of food—on the part of the mother, has no influence upon the size of the child

—or words to this effect. My attention has been turned, for some years past, with much interest to this subject; and I have been led to believe, from the result of several cases, that, by means of a medicinal regimen, the size of the fœtus in utero may be very sensibly lessened, without jeoparding its safety, or seriously impairing the health of the mother: so much so, that a child which would otherwise weigh at birth ten pounds, may be made to weigh five pounds! My opinion is founded upon the following facts: in June, 1817, I delivered with the crotchet, (the forceps and ergot had failed,) after a fearful labour of sixty hours, a lady with her first child. She was thirty-two years of age, and had a pelvis more deformed than any I have ever met with. In fact, it is the only pelvis actually deformed, which, in a practice of sixteen years, I have had to contend with. This lady soon conceived again. Her child, however, perished about the seventh month, but was not expelled until the eighth; and then, notwithstanding it was in a state of putrefaction, the labour was protracted, severe, and difficult. I ought to mention here that the first child weighed ten pounds and a half, and the second, had it lived, would to all appearance have attained the same size. Mrs. —— soon found herself pregnant again, but almost immediately afterwards began to complain of symptoms of general dropsy, which required for their suppression the daily use of medicines, during the whole period of gestation—particularly a pill composed of calomel, squills, and digitalis. The calomel kept her system almost entirely under the mercurial influence; and the squills and digitalis assisted in nauseating her stomach from day to day. At the close of a full period, she was delivered of a healthy child, weighing four pounds and a half, after a very sharp labour of five hours! The remarkable difference between this child and the first two, struck me forcibly; and I was disposed to account for it, by referring it, in a great measure, to the medicinal treatment to which the mother had been subjected; and I was determined to test the accuracy of the conjecture, by direct experiment, as soon as a proper case should come within my control. One soon occurred. A pregnant woman, who had never borne a living child, but lost three, two of them by instrumental delivery, was easily prevailed upon to submit to a course of medicines, by the prospect held out to her of an easy labour and a living child. She commenced her course about the fourth month of gestation, and continued it very perseveringly until delivery,

which was effected without difficulty. The child, (which was alive and healthy,) I did not see, being absent from the neighbourhood, but was assured that it was rather smaller than children usually are, weighing perhaps about five and a half or six pounds. Her other children had weighed from ten to twelve pounds. One of them I saw and weighed myself. It rather exceeded eleven pounds. The effect of treatment, in this case, I considered decisive, and I was confirmed in this opinion by this woman's next child, which weighed eleven pounds, and was expelled by means of ergot, after a most painful and difficult labour of forty hours. The woman had refused, during gestation, to submit to treatment, or rather her husband, (having been ridiculed by his associates on account of his dwarf—a plump, healthy little thing, by the way, as any in the neighbourhood,) had compelled her to refuse. Since this case, several other women have submitted to medicinal regimen, and the result has been uniformly the same: the child in every case being considerably reduced in size, but born alive, and to all appearances, with unimpaired health and constitution. Thus, sir, have five women, (four of which had never borne a living child,) been delivered of living children, with comparative ease, by means of a medicinal regimen. In four of the cases the woman had lost, (whether necessarily or not, I cannot say,) by the crotchet and other means, eleven children. In the fifth case, the labour preceding the one which I have noticed was frightfully severe, in consequence of the extraordinary weight of the child—fourteen pounds! Delivery was effected with great difficulty by embryotomy. In the next labour, (the one treated,) the child weighed but four pounds! and although a breech presentation, was expelled in a few pains. I intend to put this question at rest, if opportunities offer, by farther experiments. Permit me, however, to entertain in the mean time, with great confidence, the following opinion: that women with faulty pelves, may be enabled, by means of a rigid course of medicinal regimen, to bear children alive, who could not by any other known method.

"To illustrate more fully my practice, I will detail to you the treatment of a single case.

"June 1st, 1819.—Mrs. ——, aged twenty-four years, is pregnant with her fourth child—has lost three children—owing, I was told, to their uncommon size and her contracted pelvis—is supposed to be about four months advanced in gestation—is willing to submit to any kind of treatment, however severe, to pro-

cure an easy labour, and be the mother of a living child. Let her take a pill of the following prescription, morning, noon, and night—take also, twice a week, forty drops of laudanum, and be bled every month.

"R. Squills, 48 grs.—Calomel, 18 grs.—digitalis, 6 grs.—Make twenty-four pills.

"August 1st.—Has taken the pills, with a few short intermissions, very regularly—mouth slightly sore—appetite impaired—feels feeble and dejected, but is willing to persevere in the treatment. Has taken the laudanum and been bled twice.

"Let her take three grains of squills, night and morning—laudanum three times a week, and continue the bleeding. As soon as the mouth is well, resume the calomel and digitalis.

"October 1st.—Resumed the calomel and digitalis. August 10th—and has continued the calomel, with short intervals of omission, constantly since—has omitted the digitalis every other week. Continue the treatment; increasing the squills as far as the stomach will bear—omit the digitalis. Take fifty drops of laudanum every other day.

"November 17th.—Delivered yesterday, after a labour of six hours, of a plump, healthy-looking child, weighing five and a half pounds. Her other children had averaged ten pounds!

"Had I the management of a case of more than usual deformity of pelvis, I would commence the treatment as soon as conception was fully ascertained, and put the patient under a full course of various medicines, particularly of opiates and mercurials, which I would urge throughout gestation, as far as a prudent regard for the mother and child would permit.

"It would be very gratifying to me, if you would give the regimen which I have suggested, a fair trial in your practice, whenever a proper case shall offer. Cases of deformed pelvis are seldom found in the country. Our resort to the use of the crotchet is constantly owing to the increased size of the child, rather than a want of capacity in the pelvis.

"The principle upon which my practice is founded, is briefly this: to derange digestion, and keep the liver, that great laboratory of nutrition, in a constant state of morbid excitement. In confirmation of my theory, I have collected a number of cases of very small children, following bilious and other fevers, in which much medicine, particularly mercury, had been used. You have frequently noticed, I presume, the same fact. Habitual opium-takers also bear small children. There is a remarkable case of

this kind, at this moment travelling the round of the newspapers, copied from some of the British Journals."*

1720. The whole that Dr. Holcombe has urged upon the efficacy of regimen and medicine to diminish the size of the fœtus in utero, is well deserving attention, especially in Europe, where the necessity is much more frequent, as well as much greater than in this country. The combination of medicine and regimen may overcome difficulties that would not yield to either alone. Yet I cannot but feel strong doubts of the united powers in all cases under consideration. Certain it is, I have seen strong and robust children born from consumptive parents, and this even in the last stages of it, where the emaciation was great and the debility extreme. I never met with but one decided exception to this; and this was in the case related in my "Essay upon Retroversion of the Uterus;" and certain it is, I have seen healthy and large children from mothers who had been profusely salivated; yet the union of abstemiousness with purging and salivation, may effect the desirable reduction of the fœtus.

CHAPTER XLI.

II. III. MONSTROSITY AND ACCIDENTAL DEFORMITY.

1721. Both of these may render it necessary to mutilate the child, even in a well-formed pelvis; for they may produce a relative narrowness of this cavity. No certain rules can be laid down for the former, since their peculiarity cannot be ascertained beforehand. Much must, then, be left to the good sense and discretion of the practioner. One thing, however, is certain; monsters can only interfere with labour from an excess of parts. Should the pelvis then be faulty, it may subject the woman to all the penalties of a positively deformed pelvis. The accidental deformity can rarely cause a more serious evil than delay in a well-formed pelvis, though it may, in a narrow one, create all the embarrassments of a too narrow cavity. When the head or abdomen are dropsical in a well-formed pelvis, perforating them will almost always relieve the woman by the evacuation of the

* See his letter in the Phil. Jour. Med. Science, Vol. II. New Series, p. 322.

water; but in a narrow pelvis this is not sufficient; since, by that operation only, the excess of size is removed. I once saw rupture of the uterus from a hydrocephalic head. See "Essay on Rupture of the Uterus," by the author.

CHAPTER XLII.

UNCERTAINTY OF THE CHILD'S DEATH.

1722. In many instances it would be highly important, could we determine with certainty, that the child was dead while in utero, it would serve to abridge the sufferings of the mother, and sometimes would spare the accoucheur a deep-drawn sigh; but this is a matter of great difficulty, as well as oftentimes of great moment to decide. All the commonly enumerated signs have been known to fail, and even when many of the strongest were united: of this, Baudelocque* gives us a most memorable and interesting example—an example that should be well studied, and carefully treasured against the time of need.

1723. The too implicit reliance upon certain of the signs which are said to characterize the loss of life in the child, has been the cause of the immolation of thousands; and we cannot too earnestly deprecate this *facility* of credence, when we have but too much reason to wish it were so. There are but two unequivocal signs of the child's death; namely, a cessation of pulsation in the umbilical cord when prolapsed;† and the scalp forming a soft tumour in which the bones of the cranium can be felt loose and detached; resembling much in feel, the distended membranes.

1724. The escape of offensive gas; a separation of the cuticle or hair; a rolling motion within the abdomen; a shrinking of the abdomen; and the cadaverous appearance of the woman—are but uncertain signs of the child's death. Velpeau says, among other signs, "the death of the child is declared, during labour,

* System, par. 1898.

† Agreeably to Dr. Blundell, this mark is not rigidly a proof of the child's death. He desires us to "remember, that where the cord comes down, a temporary suspension of the pulsation for a few minutes, may arise from syncope."—Prin. and Prac. of Obstet. p. 533. This, however, we have never met with: it may, however, be a salutary caution.

by the escape of the meconium." We sincerely hope that the young practitioner may never take this for the sign of the child's death; as this appearance every now and then takes place, when the child is in the most perfect health. We have known it to happen at least twice, in presentations of the head, and pretty frequently when the breech has been the presenting part. For the meconium to escape from the rectum, it appears only necessary that the child's abdomen should be pretty strongly compressed.

CHAPTER XLIII.

ON THE SECALE CORNUTUM, OR ERGOT.*

1725. I HAVE often had occasion to mention this substance as a powerful auxiliary in the practice of midwifery, and as it has obtained throughout this country, as well as in Europe, a high reputation, it may be well to inquire into its pretensions. I am more anxious to do this, as the claims of the ergot have been extravagantly urged in some instances, while in others, the employment of it has been as seriously deprecated; nay, it has been condemned in a few instances as useless, and even hurtful.

1726. The action of this substance appears to be specifically upon the uterine fibres; urging them sooner or later to more or less violent contraction. It is not the alternate contraction alone

* It is more than probable that the powers of this substance over the uterine fibre was known in Germany long before it attracted notice in either France, or in this country. The German name for this substance, according to Goupil, is illustrative of such knowledge; the ergot is called "mutter korn," or womb grain, mutter signifying womb. This conjecture is strengthened by a fact mentioned to me by Dr. Lorain of Philipsburg, Pennsylvania. He says he was called to the assistance of a very old, self-created midwife, then many years from Germany. He found that she had given large doses of the infusion of the secale cornutum before his arrival, the use of which she declared she had learned previously to leaving her own country. The insulated situation of this woman's place of residence; her almost entire ignorance of the English language; her long residence in the neighbourhood in which she was found; the little communication she could have with enlightened society; and the little disposition she manifested to gain information in her profession, render it next to certain, that she had become acquainted with the properties of the ergot before she left Germany, as she has declared; a period long antecedent to our knowledge of it in this country, and, perhaps, as early as it was known in France.

that is increased by this substance; the tonic is also powerfully augmented, which is of much more value, since it can in consequence of this power, be most advantageously employed in many cases where this effect would be all-important. In this respect its effects appear to be very different from every other stimulant which has an influence upon this organ, such as opium, the oil of cinnamon, volatile alkali, &c., or the mechanical stimulus of the forceps, vectis, or the hand.*

1727. Each of the stimulants just mentioned has been known to rouse the alternate contractions of the uterus into a temporary and sometimes successful action; but after neither, does the tonic contraction follow, with any marked degree of certainty; nay, we may with much truth declare, that the inertia of this organ is very apt to follow their employment. Thus, we witness hemorrhage sometimes follow the use of either of the remedies just named, though they may have been successfully exerted, as regards the mere delivery. But, so far as my own experience goes, or a pretty extensive inquiry will justify the declaration, I can say, that neither myself nor such of my friends of whom I have asked the question, have ever witnessed such a consequence follow the use of the ergot.

1728. So far then, I think, we may with much confidence declare, that every other stimulus which has contributed to the energy of the uterus, except the ergot, has been followed occasionally by inertia of this organ: this fact is of high practical importance; as it leads us to an almost certain mode of treating such females, as may be habitually liable to floodings after delivery. It also, on the other hand, points out a caution of equal practical usefulness; namely, not to exhibit it, when there may be a chance that turning may be necessary; but more of this presently.

1729. There is another peculiarity attending the action of this

* I have never witnessed any exaltation of the powers of the arterial system; or any other marked effect, (if we except its specific action,) from the exhibition of the ergot, though I have been very attentive to the subject. But it is declared by Dr. Oslere, on the authority of Dr. Erskine and others, that it slightly increases the fulness and frequency of the pulse, produces a glow over the surface; excites nausea, and sometimes vomiting; pain and giddiness of the head.—*Philadelphia Journal of the Medical and Physical Sciences, No. III. New Series.*

As far as I have been able to determine, the effects of this substance are confined to the nervous system; and through its intervention acts specifically upon the uterus. Nor are its powers confined to the human uterus; it acts with equal and similar efficacy upon the uterus of the brute. We are told, it is familiarly used near Lyons to aid the parturient cow.

substance, not less remarkable, perhaps, though not equally important, as those just noticed; namely, the promptitude of its action; for we have constantly observed, that if it do not manifest an influence in twenty minutes, or half an hour at farthest, it utterly fails. The action of this substance is generally so extremely prompt, as sometimes to create a doubt of its agency in the minds of those unaccustomed to its operation. But I am every way certain, that the "ergot" never acts with so much efficacy, as when it acts quickly; indeed, I might say, that its success is almost in proportion to its promptitude.* By many, this very sudden action of the uterus has been attributed to coincidence, rather than to the effect of this remedy. This occasionally is certainly the case; as we see changes, similar to those effected by the "ergot," take place as suddenly where none has been exhibited; but it would be unfair to declare this to be the case always.

1730. Thus, on the 11th November, 1827, I was called to Mrs. V. in labour with her fifth child; the waters had discharged themselves half an hour before my arrival, and the patient had experienced a number of very smart pains. After the escape of the liquor amnii, the pains abated in force and frequency. On the accession of a pain, I examined my patient, and found the presentation to be a first presentation, and the head arrived at the inferior strait; the mouth of the uterus was fully dilated, and every thing gave promise of a speedy delivery. But the pains became still more feeble, and longer apart; and after waiting an hour and a half for their amendment without advantage, I resolved upon exhibiting the ergot; especially as my patient became clamorous for its exhibition. The ergot was accordingly sent for; the messenger had scarcely left the house, before the powers of the uterus were spontaneously roused, and with such efficacy, that the child was upon the point of being born when it arrived; it was, therefore, not given; ten minutes more, were all that was necessary, for the completion of the delivery. In this case, had the ergot been given, the alteration in the action of the uterus, would doubtless have been attributed to it, by those unacquainted with the peculiarities of its action; yet an experienced eye and ear would readily have detected its want of efficacy, did it exert no power, as well as be able to determine its agency, if it had really awakened the powers of the uterus.

* Goupil says, "la rapidité avec laquelle le sèigle a produit son effect est réellement suprenante; elle peut être comparée à l'action de l'émétique.

1731. As regards myself, I have the most firm reliance upon the powers of the "ergot;" and the character of its action is so distinctly marked, that a very little observation will lead us to detect it. Whether the peculiarity of the effort produced by the ergot has been observed by others, I cannot say;* it appears, however, to be perfectly well defined and highly characteristic; and I think, I am always able to distinguish the cases of coincidence, from those in which the ergot was decidedly operating.

1732. When ergot has been successfully administered, we find the uterine effort not only more quickly repeated, and more powerfully exerted, but these efforts are accompanied with less suffering than the same apparent exertions of this organ, when it is not urged to action by this drug. The woman when interrogated with respect to her feelings, expresses her sensations by saying, she feels "as if every thing was forcing from her;" but at the same time admits, that the pains have not the same character with those she suffered before; indeed, it very frequently happens that there is a great abatement of suffering, by converting a concentrated pain, and this most frequently in the back, to a more generally diffused one over the abdomen; or by obliging the back to participate, if the abdomen has been the particular seat of it. At the same time it must be confessed, that the intervals between the contractions are more uncomfortable, as an almost constant nisus is kept up by the excited, or, as it would seem, the goaded uterus, though the sensation does not amount to pain. Now, the presence of the circumstances just noticed, constitutes the peculiarity of the action of the secale cornutum.

1733. Some of my medical friends, but they are very few indeed, declare they have never witnessed *any effect whatever from the ergot, even when it has been administered in large doses.*† I account for this discrepancy in result, only by supposing the ergot which they employed was effete; a circumstance, I have reason to believe from experience, of no unusual occurrence.

1734. The like want of faith in the powers of this article, seems to prevail with many respectable practitioners in Europe, and which may be accounted for, perhaps, upon the same prin-

* Many speak of its specific action, or of its specific influence; but I do not recollect to have seen any account of the details, in which these specific effects consist.

† Chausieur and Madame La Chapelle, declare they have never witnessed any effects from the ergot, in the trials they made of it, in "la Maternité de Paris."

ciple. Dr. Davis, an accoucheur of deserved eminence, says, that "the pretensions of the secale cornutum have been generally known to the profession for nearly twenty years; yet the actual fact of its power has not been satisfactorily established; nor is there evidence of its having, in a single instance, superseded the necessity of using the forceps."* This assertion, it must be observed, is one which admits of no possible demonstration; since it would be impossible to prove that the case in which the ergot appeared to be successful would absolutely have required the use of the forceps, or that the cases relieved by the forceps might not in many instances have been successfully treated by the ergot; yet so far I can safely aver, that a number of instances have occurred in which I believe I should have employed the forceps, previously to my acquaintance with the powers of the ergot; but which were terminated by this drug, both promptly and safely. And farther, I am certain, that I do not use the forceps once now, where I used them formerly ten times.

1735. And the reason of this abatement in the employment of the forceps, may, I think, be justly attributed to the almost universal use of the ergot, by every kind of practitioner of midwifery; and hence I presume, that the secale cornutum, now achieves deliveries that would have required the forceps formerly; for were this not the case, I think I should be called upon, as formerly, to aid labours with these instruments.

1736. As every thing almost depends upon the proper preservation, and quality of the ergot, it should be kept whole, in a glass bottle with a ground stopper; and only powdered, pro re nata; nor should we ever use it after it exceeds a year in age, if possible to prevent it.† For the ergot, like almost every other vegetable substance, is easily acted upon by heat and moisture, and consequently is easily deteriorated, when exposed to their influence. I have, in several instances, failed to produce the slightest effect

* Elem. of Oper. Midwifery.

† We are, however, informed by Lorinsor, (Edinb. Med. and Surg. Journal for Oct. 1826, p. 453, that it preserves its powers perfectly for two years, as far as regards its operation on the stomachs of men; but whether it retains its specific powers upon the uterine fibre for that period, does not appear to have been ascertained by his experiments. On the other hand, we are directed by Goupil, (Journal des Progrès des Sciences, et Institution, &c. vol. iii. 1827, p. 170,) in order to be certain of the peculiar properties of this substance, to use it the same year in which it has been collected; that it must be kept in bottles hermetically sealed and not be powdered, but as it may be wanted. It appears from the experiments of M. Boettcher at Mendelurtz, that the energy of the ergot very much

with the ergot procured at one shop; whilst that from another, in the same patient, has been as prompt as efficacious.

1737. I have generally administered the ergot in substance; some prefer it in infusion.* Twenty grains in a little sugar and water may be given at once; and I seldom exceed this quantity, as I have rarely found the farther exhibition of it attended with better effect. My valued friend, the late Dr. George Holcombe, of Allentown, New Jersey, objects very strongly to the quantity just named; and proposes much smaller doses, but more frequently repeated; or as often as it may be necessary. But as the whole of Dr. Holcombe's observations on this subject are of great practical value, I feel I shall be doing a general good, as well as performing a duty, to give them at length, together with some observations upon them.

depends upon the period at which it is collected before harvest, while that procured after harvest is altogether inert.—*Amer. Jour. of the Med. Sciences, August*, 1833. No. xxiv. p. 515. See page 539, par. 1199, for a farther account of the action of ergot.

Chemical Analysis of Ergot.—In 103 parts of ergot, Mr. Wiggers of Berlin has found—

White oily matter	35.0006
Solid fatty matter, crystallizable, and of peculiar nature	1.0456
Cerine	0.7578
Fungous matter	46.0862
Ergotine	1.2466
Vegetable ozmazome	7.7645
Sugar	1.5530
Gummy extract, with red colouring principle	2.3250
Vegetable albumen	1.4800
Acid phosphate of potash	4.4221
Phosphate of lime, and traces of iron	0.2822
Silica	0.1394
	102.0930

There are some remarkable points in the preceding analysis. In the first place the presence of vegetable ozmazome identifies the ergot with the class of mushrooms, in which this substance forms a considerable proportion. In this ozmazome seems to reside the power which promotes parturition. The ergotine is insoluble in water, and seems, from the experiments of M. Wiggers, to be the principle in which the poisonous qualities of the ergot reside. On several animals it has operated as a powerful irritant poison, while the ozmazome produced no such effect.—*Lancet, from Alleg. Med. Zeit.* 10 *Nov.* 1832.

* Bordot informs us that the old women in the department of "Cote d'or," infuse a handful of this substance in a cup of water, and give a table-spoonful of it every five minutes. This dose, Goupil observes, is much stronger than that pointed out by accoucheurs; but he says we must notice the manner in which it is taken, as it is much less active than when given in powder.—Ibid. p. 171.

"*Allentown, N. J. Nov.* 21, 1825.

"Dear Sir—I have just finished reading your System of Midwifery, and have to request you to accept my thanks, in common with the profession, for the much novel and valuable information which it contains.

"Permit me to call your attention, for a few moments, to several subjects which have been but briefly noticed in your work; the first is ergot. This extraordinary agent owes its introduction into the materia medica entirely to American physicians; and as yours is the first system of Midwifery which has issued from an American source, since its use has become general, the profession, both here and abroad, looked to your pages for a more particular account of the properties and uses of ergot than has heretofore been given. I am afraid they will be much disappointed, as I frankly declare to you I have been, in finding it passed by almost unnoticed. Much, it is true, has already been written concerning it; and, I am aware, that practitioners are supposed to be well-informed as to its properties, and the cautions necessary to be observed in its administration. But this I am persuaded is a mistake—and, in my opinion, you could not more efficiently subserve the cause of humanity, and obstetrics, than by devoting a chapter in the next edition of your work to the consideration of the uses and abuses of this article.

"The scruple dose, as a general prescription for aiding the expulsive stage of labour, I am convinced, from considerable experience, is exceptionable and dangerous. In ordinary cases, no mischief, it is acknowledged, will result from the exhibition of so large a dose. But the child, if it be unusually large, or the pelvis faulty, or if the accoucheur have to contend with a first labour, will always be put to imminent danger, and frequently destroyed by scruple doses, when its safe delivery might have been effected, either by the unassisted energies of the mother, or by small divisions of the dose, frequently repeated.

"Your zeal in proscribing the use of the crotchet, will doubtless obtain, as it certainly merits, the plaudits of your brethren —at least of the more enlightened portion of them. But if the use of the terrible instrument just named be as reprehensible, (and who will presume to deny it?) as you have represented it, how much less so, or rather how much more so, is the intemperate use of an agent which sacrifices a four-fold, if not a twenty-fold greater number of victims? More children, I am satisfied

from what I have seen and heard, have already perished by the injudicious use of ergot, during the few years which have followed its introduction into the practice of this country, than have been sacrificed by the unwarrantable use of the crotchet for a century past! This, if correct, is a most serious fact; and of its truth I do not entertain the slightest doubt.

"But, notwithstanding the strong language I have just used, I regard ergot, when cautiously administered, as a most interesting and valuable adjuvant in the practice of midwifery. I have used it constantly, since Dr. Stearns first called the attention of physicians to it. For some time I used the scruple doses, or corresponding doses of the decoction, which, I am afraid, are every where yet too common, but soon abandoned this practice in consequence of several fatal demonstrations of its impropriety. Since then I have administered it in very small doses—say from two to three grains, which I repeat as often as may be necessary; and, in this manner, I am *generally* able to effect my object; and *always* without injury to the mother or child. In fact, I have never known a child perishing from ergot, administered in this cautious manner. I prescribe it now unhesitatingly in first labours, and even in cases of contracted pelvis; and such is the extraordinary energy imparted to the uterus, by the slow but persevering mode of exhibition which I have adopted, that I have very rarely found it necessary, for several seasons past, to resort to the use of the forceps.

"Independently of the power of the ergot in aiding the expulsion of the child, it seems to possess other important properties in the practice of midwifery. I have never seen a case of puerperal fever follow its administration. This fact may be accidental, and confined to my experience; but the remark, I have thought, might be interesting to you as a teacher of midwifery—at least worth noticing.* It sometimes completely extinguishes the lochia; but this effect has never resulted, as far as I have observed,

* It would be a most valuable acquisition to our remedial means, did the "ergot" contribute to the lessening of the cases of puerperal fever. Upon this point, I can say nothing practically; it may be true, as stated by Dr. Holcombe, that this may be confined to his own experience, or rather that it may be merely coincident; yet it deserves serious attention; for this substance may have a prophylactic power. I would, therefore, earnestly recommend this subject to the attention of the accoucheurs of our country, and especially to those who may inhabit districts, in which this too fatal disease sometimes becomes epidemic.

in injury to the mother.* I prescribe it, which I believe is a common practice, when flooding after delivery is apprehended. Also, in cases of partial prolapsus of the uterus, and of habitual bearing-down, from whatever cause the last distressing affection may arise; and I am much deceived, if great comfort is not frequently derived from this precautionary exhibition of the medicine, in each of the diseases just specified.† But I am afraid I am extending my observations beyond your time and patience; I will, therefore, close them, by repeating the suggestion which I have already taken the liberty to make—that you would confer a great benefit upon midwifery, by devoting a chapter in the next edition of your work, to the medicinal history of ergot. The profession, I repeat, expect it of you; and, permit me to add, from the situation which you occupy in American obstetrics, has a right to expect it of you. But, to return:

1738. I think I am right, when I say there is no decisive instance extant, in which the "ergot" has had a direct unfriendly influence upon the child. I am aware much has been said to the contrary by many respectable practitioners; but I think it would be no difficult matter to show, that when a still-born child has followed the exhibition of the "ergot," it has been constantly owing to the following circumstances. First. It has been given too early; that is, long before any reasonable expectation should have been entertained that delivery would soon follow its exhibition, owing to the want of relaxation in the soft parts. Second. Given when the head has not been well situated, and the practitioner, perhaps, not aware of this circumstance; consequently, making a wrong estimate of the time that must elapse before delivery could take place, after its exhibition. This error very commonly arises from the facility with which the head of the child may generally be felt, or its supposed dispositions to escape through the external parts, because they, as well as the uterus,

* "It sometimes completely extinguishes the lochia."* I have never seen this effect follow the use of the "ergot." Nor do I believe it generally necessary that it should do so; for if the labour have been well conducted through all its stages, the lochia will rarely be too abundant. See Chapter on the Lochia. Yet it may be highly important to be in possession of a remedy when the diminution of the lochia may be an object.

† The usefulness of the "ergot" in the last specified affection, namely, "habitual bearing down," is certainly contrary to all reasoning upon the subject; and would be, if correct, one of the many instances in which we are obliged to make speculations yield to experience.

* I presume Dr. H. only means by "Extinguishing the lochia," a great diminution of it.

are favourably disposed. No mistake is more common than this among practitioners who are ignorant of the mechanism of labour; for they suppose there is but little to do; and "were the pains but *a little stronger*, the child would soon be delivered." Under this delusion the ergot is given, with every expectation of a speedy issue. But this does not take place agreeably to their hopes, and very much to their surprise, for they are altogether unable to account for the failure. Whereas, an enlightened practitioner would instantly have detected the wrong position of the head, and would have seen at once how much was yet to be effected before delivery could take place. He would also have been able to determine very nearly the time and the degree of effort it would have required to terminate the labour; and the ergot would have been withheld until more had been done by the unaided contractions of the uterus. But the better to illustrate this fruitful source of error, we will first refer to the position of the head, when not well situated; and secondly, to the difficulty the head sometimes finds in undergoing these changes, even when it is well situated; though the soft parts may be favourably disposed.

1739. 1st. The difficulty arising from the position of the head. Thus, in the fourth, fifth, and sixth presentations, there may be much delay, from the forehead being sometimes obliged to come under the arch of the pubes, as in the fourth, and fifth, probably, if not changed, and unavoidably in the sixth; which circumstance may have escaped the calculation of the practitioner at the time he exhibited the ergot; or he may have been ignorant of it; consequently, much unlooked-for delay may ensue, and this sometimes to the injury of the child, and the uterine parietes. But in this case, no blame should attach to the "ergot" specifically; for the same consequences will follow from the long-continued efforts of the uterus, where none of this substance has been administered. Baudelocque gives us instances of this kind; and every practitioner of any standing must have observed the same thing; indeed, the danger of the child after the evacuation of the waters, is always in proportion to the tonic power, and the continuance of the alternate contractions of the uterus; hence, we have always reason to apprehend, that the child will be still-born; when the uterine contractions continue very long, and with much force, after the discharge of the liquor amnii;* we are persuaded

* It is evident from the nature of the communication between the mother and child while in utero, that the latter is altogether dependent upon the continuance

this is agreeable to the experience of all who practise midwifery. If this be so, when no "ergot" has been administered, it may certainly à fortiori happen, after it has been given, without any blame being justly attached to its powers. Some have carried their apprehensions of this substance so far as to declare it will produce vesications, and inflict other injuries upon the child's skin, in the short time that shall elapse between its exhibition and the final termination of the labour. This is even more incomprehensive, and incredible, than the influence of the imagination upon the fœtus in utero; at least it should be classed with it.

1740. Secondly. The difficulty the head sometimes finds in undergoing the changes necessary for its escape from the pelvis, when the soft parts are well disposed.

1741. This may arise from several causes. First, when a proper relation does not exist between the head and the pelvis, even when the head is well situated. When this happens a long series of efforts will be required, to force the posterior fontanelle to place itself under the arch of the pubes; and nothing but an enlarged experience, with an entire knowledge of the mechanism of labour, will enable the practitioner to determine the quantity of force, and the lapse of time that will be required for this purpose. In this case, should the "ergot" be resorted to, it will be blamed if the child be still-born, when it is altogether the fault

of circulation for its life; that this circulation is maintained by means of the placenta; and, consequently, will be more or less perfect, or cease entirely, as this mass may preserve its connexion with the uterus unrestrainedly, be embarrassed or have its cells, or vessels altogether obliterated, by the degree of force exerted by the contracting uterus. And that the degree of compression which the placenta may suffer, will be in the direct ratio of the power of the tonic, and the frequency and force of the alternate contractions of the uterus: now, the former will be strict almost in proportion to the time that elapses after the waters have escaped; and the latter will be repeated, as often as the susceptibility of the uterus will enable it to contract. It will follow, then, that whatever increases the tonic and alternate contractions, will increase the circumstances just named as being unfavourable to the security of the child, and which must necessarily be augmented in proportion to the delay, which supervenes, from the rupturing of the membranes, to the birth of the child. If then, the ergot be given after the waters are evacuated, and much delay take place in the delivery, the child must almost necessarily suffer; not because the ergot has an unfriendly influence directly upon it, but because it was given when the uterus had too much resistance to overcome; a delay is thus created, which exposes the placenta to every degree of compression, even to the entire stopping of the circulation within it—when this happens, the child must die, if not very speedily relieved from its thraldom; and hence, we see children still-born, sometimes after the use of the ergot.

of the practitioner—for in this case, the "ergot" should not have been given, so long as the natural pains continued powerful; for it is not so much by multiplying the force, as by repeating its application, that the desirable end is effected. We have known the "ergot" given under these circumstances, and the uterus to become exhausted by being thus unduly urged: and the only resource ultimately has been in the forceps. Secondly, at other times, when the posterior fontanelle has even placed itself under the arch of the pubes, it will sometimes require the long-continued and the often-repeated efforts of the uterus, to carry the parietal protuberances below the tubers of the ischia. Now, if "ergot" be given in this case, it may be blamed, if the child be still-born, when it had no agency in the disaster.

1742. Dr. Henry Davies says, "It may be observed, that in some cases, when the pelvis was a little confined, and when the head was not sufficiently low down for the application of the common forceps, the secale has been successfully used, and the child delivered with the forceps: very great discretion in these cases is required."* Dr. Davies gives several well marked instances of the influence of the ergot in feeble action of the uterus.

1743. But certainly the most common cause of the failure of the "ergot" is owing to its injudicious and indiscriminate exhibition. It has been given, we have well ascertained, before the membranes have been ruptured; the os uteri not at all dilated, and the external parts quite rigid. What but defeat and injury can result from such an improper use of this powerful aider of uterine contraction? This substance is now in familiar use among midwives, who have neither principles nor experience to direct its proper employment; and we are credibly informed, it is used in this city by a practitioner in extensive business, in almost every case to which he is called.

1744. This is truly the abuse of a valuable remedy; for if our information be correct, the too free use of it in this gentleman's practice, has occasioned very many cases of prolapsus uteri. This effect of the ergot may perhaps be questioned by some, but I have not the smallest doubt of the fact, from what I have seen, when this medicine had been improperly taken. A lady aborted at a little beyond the fifth month with twins. The involucra did not come away for several days after the expulsion of the embryos; and as they came off in one mass, very soon after taking twenty grains of "ergot" in powder, the lady could not be per-

* Med. and Phys. Journal, July and August, 1825.

suaded but that one of the placentæ remained, and became very anxious for its discharge, and desired, that another dose of the ergot might be given her—this I absolutely refused; but at the same time assured her, in the most positive terms, that nothing remained to come away. It seems, however, that she was not convinced; for I had scarcely left the house, before she caused another portion of the ergot to be given her. The consequences were, a repetition of violent pains, and the escape of a considerable portion of the uterus through the os externum. She became now excessively alarmed, and I was sent for in haste. I found her in great agony; an agony resembling that of the last moments of labour; and upon examination, the uterus was found in the situation just mentioned.

1745. The uterus, owing to the constant and violent nisus created by the ergot,* was restored with some difficulty; and the pains were appeased after awhile by large doses of laudanum. She was obliged to wear a pessary for a long time, before the uterus recovered its position.

1746. I, am therefore, persuaded, that much future injury may be sustained, by giving this medicine in cases where there is little or no resistance to be overcome; for in such cases the increased efforts of the uterus, produced by the ergot, continue after the child is delivered, as its impression does not immediately wear off: this took place in this case at a time when the uterus had nothing to support it, or to retain it within the pelvis; it must, therefore, become prolapsed, if not protruded.

1747. From what has been said, it would appear that the ergot is a powerful medicine; so powerful indeed, that well defined rules should be laid down for its use. It would seem, that it is the improper exhibition of this drug, and not a specific power, that creates the evils but too commonly charged to it; also, that there is no satisfactory evidence of its exercising any baneful effects upon the child in utero.

1748. The following rules for the use of the ergot, if attended to, I think will prevent any evil following its exhibition.

1749. 1st. It should never be given before the membranes are

* This effect of the ergot has often been noticed; the impression it makes upon the nervous system remains a long time; sometimes even after this substance has been rejected from the stomach: in this respect, it is like opium, and some other narcotics. Desgranges assures us he has seen this: yet the delivery has gone on with equal speed and certainty.

ruptured, the os uteri dilated, and the external parts disposed to yield.

1750. 2d. It must not be used, so long as the natural pains are efficient, and competent to the end.

1751. 3d. But should they flag, from any cause, it may be given, provided the labour be a natural labour, according to our acceptation of the term "natural labour;" that is, when the head, (if well situated,) the breech, the feet, or the knees present. For, independently of any accident which may complicate the labour, it is sometimes desirable, for the safety of the child, to hasten it, when the natural powers are incompetent to this end.

1752. 4th. And if the labour be accompanied by any such accident as flooding, convulsions, syncope, &c. (see par. 651) it may sometimes be employed to great advantage, provided rules 1 and 2 are not violated.

1753. 5th. It may be used very often with much advantage in every kind of premature labour; and at full time, when the placenta is not thrown off, and the uterus is found in a state of atony.

1754. 6th. Where flooding takes place after the rupture of the membranes, the os uteri well dilated, the pains feeble, but the child well situated, and the pelvis well conformed.

1755. 7th. Where the head of the child has been left in the uterus by being separated from its body.

1756. 8th. Where the utêrus is painfully distended by coagula.

1757. Dr. Ward, of New Jersey, recommends, that the ergot should be used, "in alarming uterine hemorrhages, which sometimes take place before delivery, whether it takes place in consequence of a detachment of some portion of the placenta, it being attached to the fundus uteri, or whether it be owing to a separation of its attachment over the orifice of the uterus." In this advice, I cannot agree with this respectable practitioner; for, in the first instance, he states, there can be no advantage derived from exciting, or increasing pain, unless the os uteri be well opened, and the membranes protruding, that they may be ruptured, if this can be done with propriety;* for until the liquor

* We say, "if the membranes can be ruptured with propriety;" for this cannot, nor should not always be resorted to; for instance, it should never be done where the presentation is not natural, unless we mean to proceed immediately to artificial delivery. And if this should be deemed expedient, there can be no propriety in giving the ergot, for the less opposed we are by pain during turning the better. It, therefore, also follows, that this substance should

amnii be expended, the hemorrhage cannot be arrested by exciting the alternate contraction of the uterus; and the tonic, by which this discharge can alone be stopped, under such circumstances, cannot take place, until the membranes have given way.

1758. In the second case in which Dr. Ward proposes the ergot, we apprehend it would be decidedly mischievous; as it is found, that in placental presentations, the flooding is always increased by pain; as it directly tends to augment the separation of the placenta.

1759. It may, however, be said, that in the unavoidable hemorrhage, an advantage may be derived from the exhibition of the ergot, by hastening the labour, though it may for a short time increase the discharge. But in order that this reasoning may have any value as a practical precept, the cases in which this advantage could be derived, should be extremely well defined; nothing should be left contingent in a complaint so dangerous, and which has but one successful mode of treatment, so far as we yet know; namely, the delivery of the child. Now, with these admissions, we are every way disposed to receive any evidence in favour of the remedy proposed, and for the particular species of hemorrhage in question. And if Dr. Ward will assure us from his own experience, that the ergot will supersede the necessity of artificial delivery from the promptness with which it effects delivery, we will hail this substance, as one of the most valuable of our therapeutical remedies; but until this be done, we shall feel a reluctance to adopt this remedy, in the cases under consideration, as *reasoning* appears to be decidedly against its employment.

1760. Let me be borne with a little longer, as this subject is one of high interest in every point of view; for a placental presentation is always one of great danger, even under the best management: and it is almost necessarily fatal, under bad. Do not let me be supposed, in this investigation, to substitute reasoning for facts; for the very contrary would be my wish. But until I shall be in possession of unequivocal testimony in its favour, I shall remain, at least doubtful, of the safety of employing it.

1761. I have in so many words declared, that reasoning is against the use of the ergot, in the unavoidable hemorrhage; I will now endeavour to show this to be the case. The primary object in all cases of hemorrhage is to arrest the bleeding: now,

not be given in cases where it will be certainly necessary to turn; especially if the waters have long been drained off.

in the cases in question, this is particularly necessary, if it be even temporarily; and for this purpose a variety of means are resorted to;* but this cannot be done absolutely, but by delivery. Why should delivery be the only certain remedy in this case? For several reasons; first, because a temporary suspension of the bleeding is no security against its return; as the very mechanism of labour causes the placenta to detach itself from the mouth of the uterus; and when this takes place, hemorrhage must ensue; and this in the exact ratio to the extent of the separation. Secondly, this being the case, it follows, that whatever tends to increase the separation will necessarily augment the bleeding—uterine contractions have this tendency; and the ergot is almost certain to provoke, or increase, uterine contraction; consequently, to increase hemorrhage. Thirdly, because pains may exist for some time, without the os uteri being disposed to yield; yet during the return of each pain, the hemorrhage is increased; consequently, if the uterine contractions be increased in force or frequency by any agency whatever, and the mouth of the uterus does not dilate in the same proportion, mischief, instead of good, must be the result.

1762. For these reasons, we are of opinion, that the ergot should not be used in cases of placental presentations, as a general practice; and if used at all, it should only be when the os uteri is well dilated, or easily dilatable. In such cases it may be occasionally useful, by urging the uterus to brisker contractions, and thus effect the delivery of the child as speedily, perhaps, as when turning is had recourse to; especially if this must be attempted by the inexperienced practitioner.

1763. The ergot may be used with a fair prospect of success, when the head of the child has been left within the cavity of the uterus, after the delivery of its body, when no objection can arise from the unhealthy condition of the pelvis.

1764. I have also derived much advantage in several cases of menorrhagia; where the long continuance of the disease, rather than the immediate excess of the quantity discharged, rendered it important it should be arrested. I have given, in such cases, three grains three times a day, in the form of a pill, and continued it for some time.

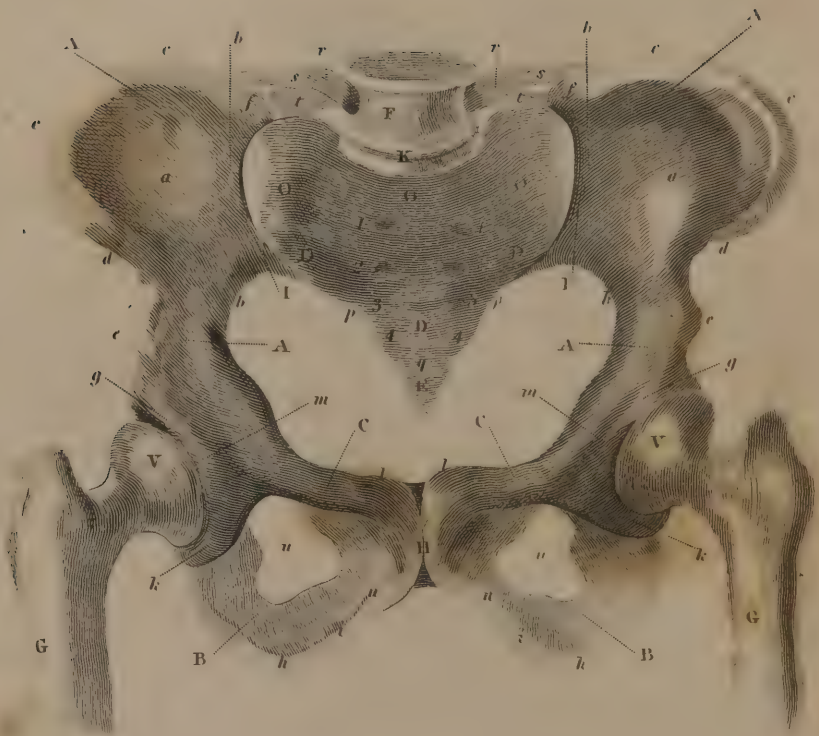
1765. It may also be useful in cases of polypi, when it shall be desirable to force these substances beyond the neck of the uterus,

* See Chapter on Uterine Hemorrhage from the location of the placenta.

for the purpose of applying a ligature, or with a view to their excision. I have some time since suggested its probable usefulness in hydatids of the uterus;* and its value in such cases has been in part realized by Dr. Macgill.†

* See Treatise on the Diseases of Females, Chapter on "Hydatids of the Uterus," by the Author.

† See his interesting case in the American Journal of the Medical Sciences, No. I. November, 1827, and, also, in the chapter just referred to.


A
c
b
r
s
f
t
F
K
O
G
a
d
I
D
p
q
E
A
g
m
C
V
u
B
h
k
G

EXPLANATION OF PLATE I.

(FROM BAUDELOCQUE.)

A, A, A, A, The ossa ilia, properly so called.
a, a, The iliac fossæ.
bb, bb, The angle which divides transversely and obliquely from behind forward, the internal face of the os ilium into two parts, and which makes part of the brim of the pelvis.
cc, cc, The cristæ of the ossa ilia.
e, e, The anterior superior spine of the ossa ilia.
f, f, The angle formed by the internal lip of the crista of the ilium towards the extremity of its anterior two-thirds, and to which is attached a ligament inserted at the other end in the transverse apophysis of the last lumbar vertebra.
g, g, The inferior angle of the os ilium, which makes part of the acetabulum.
B, B, The os ischium.
h, h, The tuberosities of the ischia.
i, i, The branches of the ischia.
k, k, The posterior parts of the ossa ischia, which make parts of the acetabula.
C, C, The bodies of the ossa pubis.
l, l, The angles of the ossa pubis.
m, m, The posterior extremities of the ossa pubis, which make part of the acetabula.
n, n, The descending branches of the ossa pubis, which unite with those of the ischia.
D, D, D, The os sacrum.
1, 2, 3, 4, The anterior sacral holes.
o, o, o, The base of the sacrum.
p, p, The sides of the sacrum.
E, The coccyx.
F, The lumbar vertebra.
r, r, The transverse apophyses of the vertebra.

s, s, The ligaments which go from the transverse apophyses of the last vertebra, to the angle of the internal lips of the crystæ of the ilia, indicated by the letters, f, f.

t, t, Two other ligaments which descend from the same apophyses to the superior edge of the sacro-iliac symphyses.

G, G, The femurs or thigh bones.

V, V, The heads of the femurs received into the acetabula.

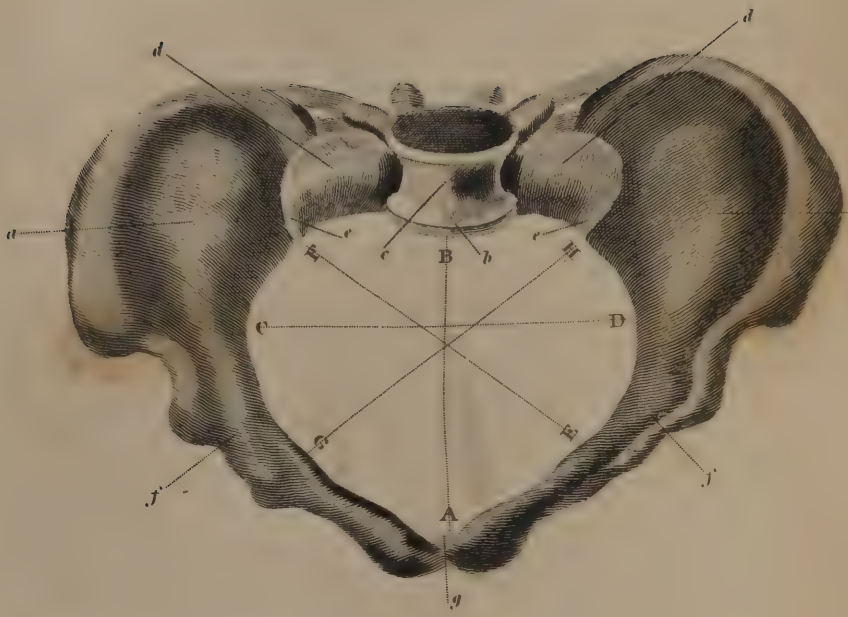
u, u, The foramina ovalia.

Symphyses of the bones of the pelvis.

H, The symphysis of the ossa pubis.

I, I, The sacro-iliac symphyses.

K, The sacro-vertebral symphysis.


d
d
a
a
c
c
c
c
B
b
H
H
C
D
G
E
f
f
A
g

EXPLANATION OF PLATE II.

This figure represents the entrance of a well-formed pelvis.

a, a, The iliac fossæ.

b, The sacro-vertebral angle, or the projection of the sacrum.

c, The last lumbar vertebra.

d, d, The lateral parts of the base of the sacrum.

e, e, The sacro-iliac symphyses.

f, f, The parts over the acetabula.

g, The symphyses of the pubes.

The lines indicate the different diameters of the superior strait.

A, B, The antero-posterior, or little diameter.

C, D, The transverse, or great diameter.

E, F, The oblique diameter, which extends from the left acetabulum to the right sacro-iliac junction.

G, H, The oblique diameter, which goes from the right acetabulum to the left sacro-iliac junction.

EXPLANATION OF PLATE III.

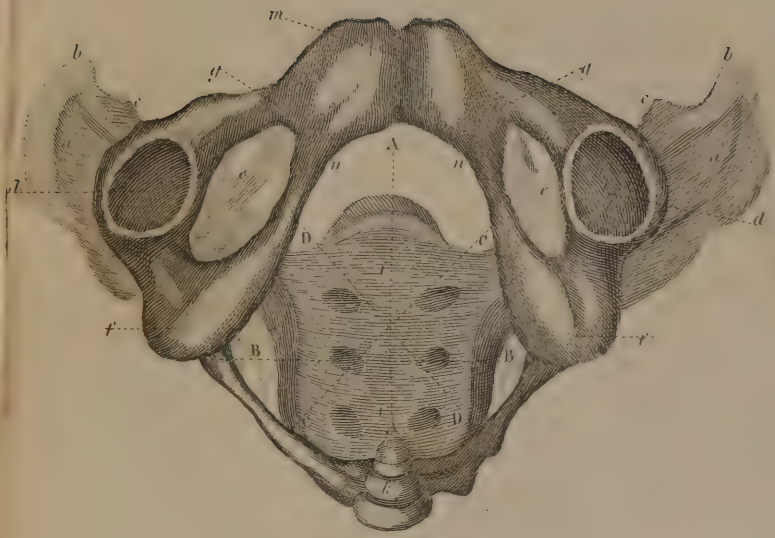
This figure represents the inferior strait of a well-formed pelvis.

a, a, The external faces of the os ilia.
b, b, The anterior superior spines of the ossa ilia.
c, c, The anterior inferior spines of the ossa ilia.
d, d, The acetabula.
e, e, The foramina ovalia, with the obturator ligaments.
f, f, The ischiatic tuberosities.
g, g, The ossa pubis.
h, h, The branches of the ossa pubis and ischia united.
i, i, The sacrum.
k, The coccyx.
l, l, The sacro-ischiatic ligaments.
m, The symphysis of the pubes.
n, n, The arch of the pubes.

The lines indicate the diameters of the inferior strait.

A, A, The antero-posterior diameter or great diameter.
B, B, The transverse or small diameter.
C, C, D, D, The oblique diameters.

PLATE III.




d
d
d
a
a
B
B
C
C
D
D
b
b
k
k
h
h
i
i
c
c

EXPLANATION OF PLATE IV.

This figure represents a deformed pelvis.

a, a, The ossa ilia.
b, b, The ossa pubis.
c, c, The ossa ischia.
d, d, d, The last lumbar vertebra.
e, The projection of the sacrum.
f, f, The sacro-iliac symphyses.
g, The symphysis of the pubes.
h, h, The foramina ovalia.
i, i, The branches of the ossa pubis and ischia, which form the anterior arch of the pelvis.
k, k, The acetabula.

The lines indicate the diameters of the superior strait.

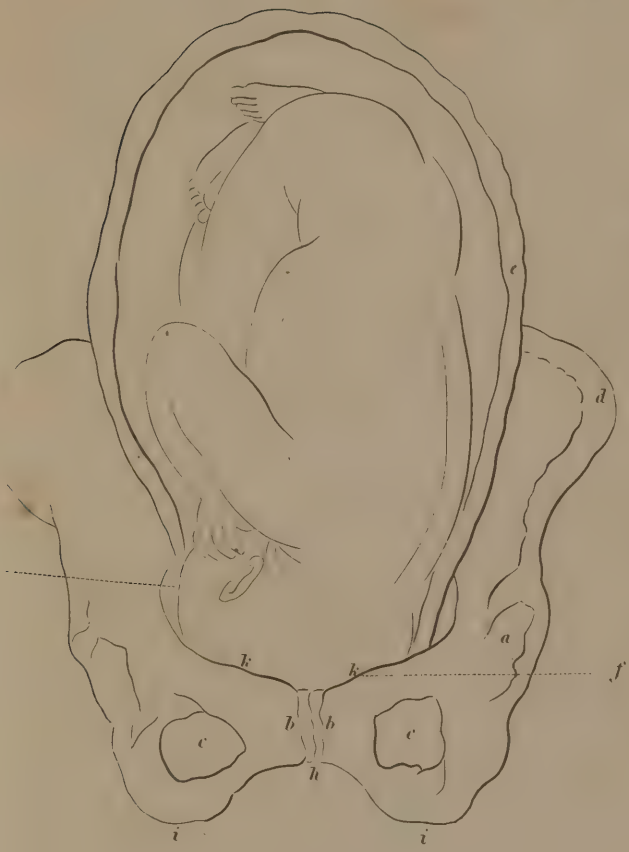
A, A, The antero-posterior diameter; its natural width reduced to fourteen or fifteen lines, or so many portions, twelve making an inch.
B, B, The transverse diameter—its length, in this subject, four inches, ten lines.
C, C, The distance from the projection of the sacrum, to that of the margin which answers to the left acetabulum, thirteen lines.
D, D, The distance from the same point of the sacrum, to that of the margin which answers to the right acetabulum, twenty lines.

EXPLANATION OF PLATE V.

This plate is intended to represent the first presentation of the vertex, or where the posterior fontanelle is behind the left acetabulum, and the anterior to the right sacro-iliac symphysis. In this position, the head offers itself diagonally to the opening of the superior strait; the left ear will correspond with the right foramen ovale, and the chin is pressed against the sternum.

a, The left acetabulum.
b, b, The symphysis of the pubes.
c, c, The oval foramens.
d, The spine of the ilium.
e, The uterus.
f, The dots indicating the posterior fontanelle.
g, The anterior fontanelle, or right sacro-iliac symphysis.
h, The arch of the pubes.
i, i, The tubers of the ischia.
k, k, The margin of the pelvis, or superior strait.

For the mechanism of this labour, see page 229.
For the mode of turning in it, see page 276.
For the application of the forceps, see page 305, par. 816, and following.


e
d
a
f
k
k
b
b
b
c
c
i
i


c
d
g
a
k
k
f
c
h
i

EXPLANATION OF PLATE VI., OR SECOND PRESENTATION.

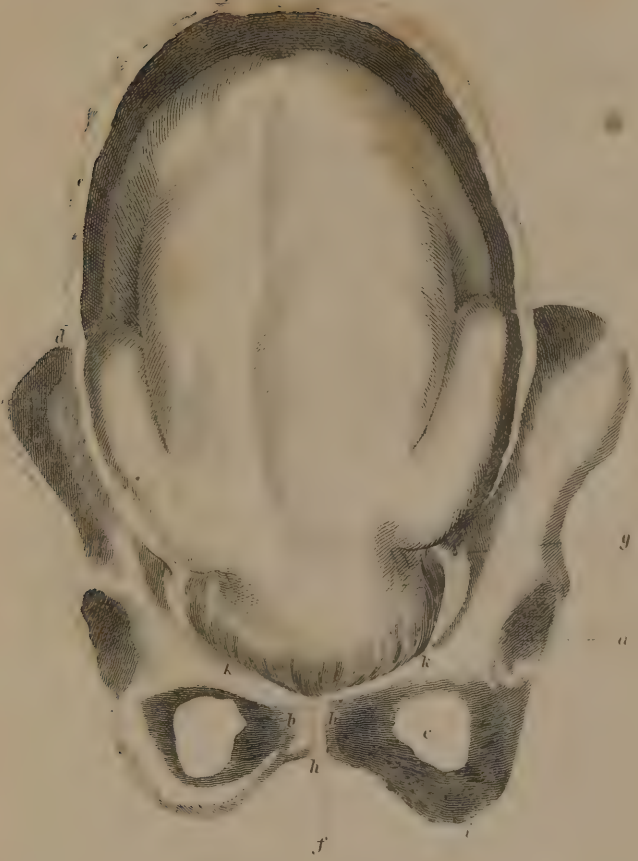
a, The right acetabulum.
b, The symphysis of the pubes.
c, Left foramen ovale.
d, Spine of the right ilium.
e, The uterus.
f, Dots representing the site of the posterior fontanelle.
g, Anterior fontanelle, or left sacro-iliac symphysis.
h, Arch of the pubes.
i, Tuber of the left ilium.

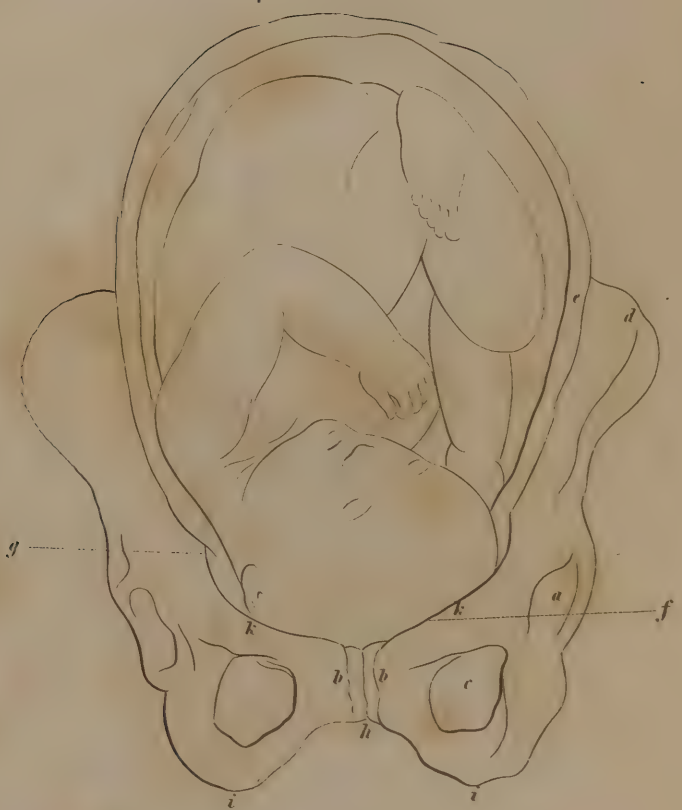
For the mechanism of this labour, see page 231.
For the mode of turning, see page 278.
For the application of the forceps, see page 306, par. 819, and following.

EXPLANATION OF PLATE VII., OR THIRD PRESENTATION.

a, Left acetabulum.
b, b, Symphysis pubes.
c, Left foramen ovale.
d, Spine of the right ilium.
e, The uterus.
f, The posterior fontanelle, indicated by the dots.
g, Left sacro-iliac symphysis.
h, Arch of the pubes.
i, Tuber of the left ischium.

For the mechanism of this labour, see page 231.
For the mode of turning, see page 278.
For the application of the forceps, see page 307, par. 820, and following.


d
g
a
k
k
b
b
c
h
f
i


g
e
d
k
k
a
f
b
b
c
h
i
i

EXPLANATION OF PLATE VIII., OR FOURTH PRESENTATION.

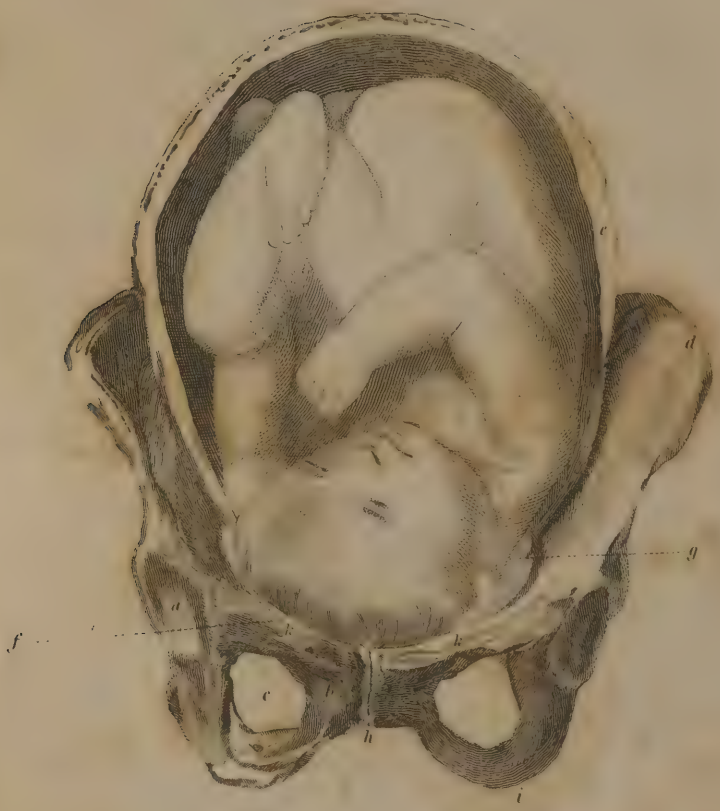
a, Left acetabulum.
b, b, Symphysis pubis.
c, Left foramen ovale.
d, Spine of the ilium.
e, The uterus.
f, Anterior fontanelle, indicated by the dots.
g, Right sacro-iliac symphysis.
h, Arch of the pubes.
i, Left tuber of the ischium.

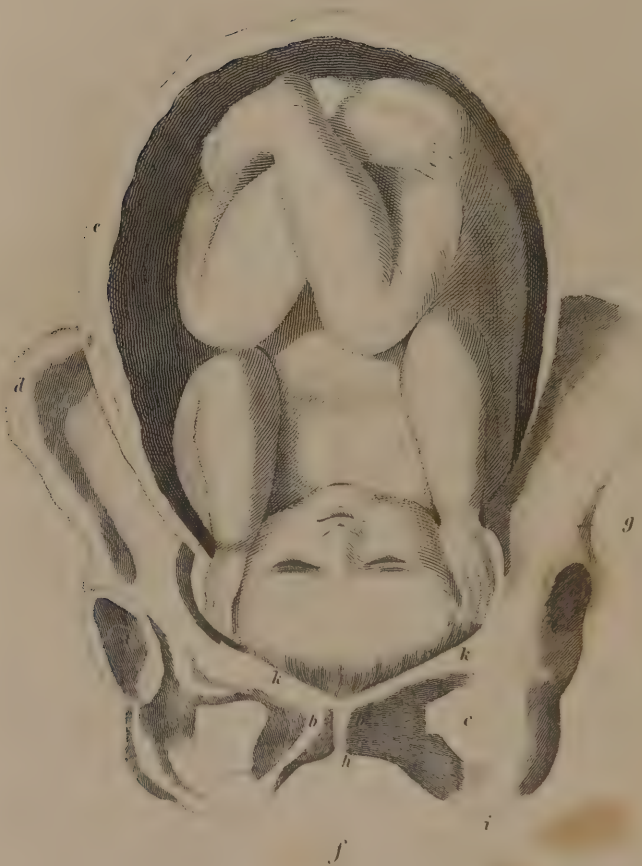
For the mechanism of this labour, see page 232.
For the mode of turning, see page 279.
For the application of the forceps, see page 308, par. 824, and following.

EXPLANATION OF PLATE IX., OR FIFTH PRESENTATION.

a, Right acetabulum.
b, Symphysis pubis.
c, Right foramen ovale.
d, Spine of the ilium.
e, The uterus.
f, Anterior fontanelle, indicated by the dots.
g, Left sacro-iliac symphysis.
h, Arch of the pubes.
i, Tuber of the ischium.
k, k, Margin of the pelvis.

For mechanism of this labour, see page 237.
For the mode of turning, see page 279.
For the application of the forceps, see page 309, par. 825, and following.


c
d
g
f
a
b
k
e
h
i


c
d
g
k
k
b
c
h
i
f

EXPLANATION OF PLATE X., OR SIXTH PRESENTATION.

a, Right acetabulum.
b, b, Symphysis pubis.
c, Foramen ovale.
d, Spine of the ilium.
e, The uterus.
f, Anterior fontanelle behind the symphysis pubes, as indicated by the dots.
g, Left sacro-iliac symphysis.
h, Arch of the pubes.
i, Tuber of left ischium.

For the mechanism of this labour, see page 237.
For the mode of turning, see p. 280.
For the application of the forceps, see p. 309, par. 828, and following.

EXPLANATION OF PLATE XI.

Fig. I.

This plate represents the middle-sized pessary.

From a, a, Two inches and four-tenths.

b, A central hole to permit any discharges to pass, three-tenths of an inch in width.

c, c, An excavation for the neck of the uterus to lie in, when applied.

Fig. II

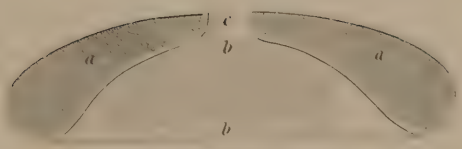
Is a central section of the same pessary.

a, a, Represents the internal cavity of the pessary.

b, b, Represents the depth of the excavation of c, c, of Fig. 1. $5\frac{1}{2}$ tenths of an inch deep.

c, A section of the central hole, b, of Fig. 1.

Fig. 2.



Section through the Centre.

Fig. 1.

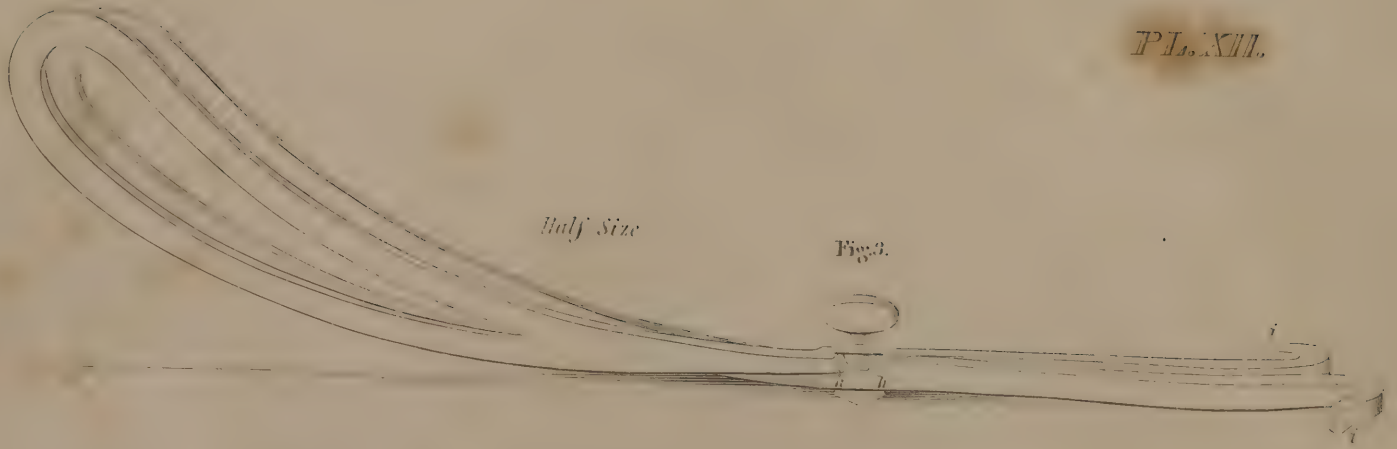


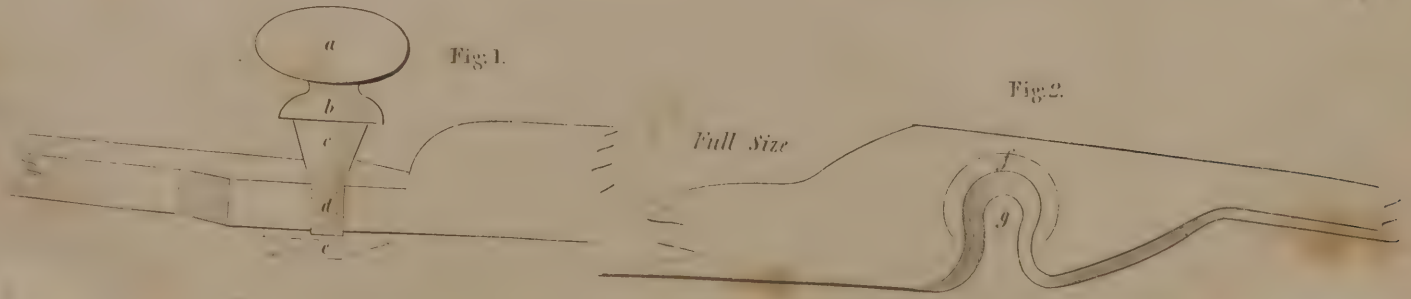
Plan

PL. XII.

Half Size

Fig. 3.





EXPLANATION OF PLATE XII.

EXPLANATION OF THE FORCEPS OF PROFESSOR SIEBOLD.

I have been favoured, by the politeness of Dr. Eberle, with a sight of Professor's Siebold's forceps. In their general form and size, they differ but little from the forceps of Baudelocque; they are rather longer in the clams, and a little more curved, as will be seen by examining the plates.

What I value in them is, their very ingenious mode of locking; I am persuaded this has a decided advantage in some positions of the head, and will contribute to the success of application.

FIG. I.

a, The top of the screw, which serves to unite the blades.
b, The head of the shoulder of the screw, which is received a very small way into the countersink f. fig. 2.
c. The conical body of the screw, which is received into the excavation g. fig. 2.
d, The cut part of the screw, which passes into the female screw cut in the body of the blade of the forceps.
e, The head, or but, against which the lower extremity of the screw is received.

FIG. II.

f, The countersink for receiving the shoulder b, fig. 1.
g, The conical excavation for the reception of c. fig. 1.

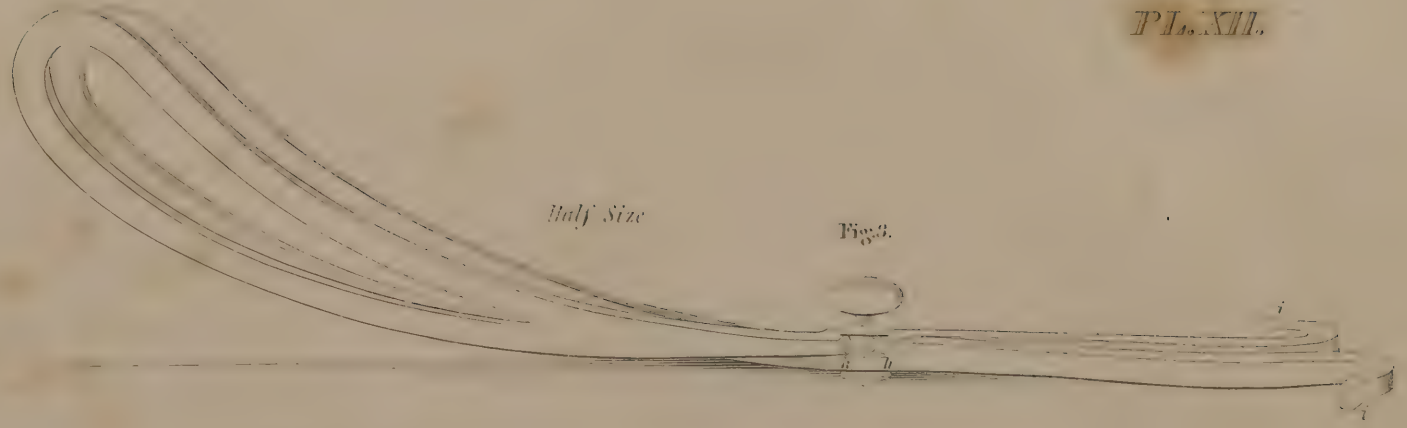
FIG. III.

The forceps united and reduced to one-half the proper size.
h, h, The manner in which the screw unites the blades.
i, i, The turned extremities of the handles, which serve like those of Baudelocque, as blunt-hooks.

PL. XII.

Half Size

Fig. 3.



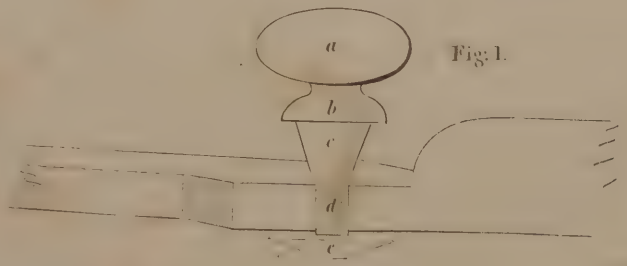
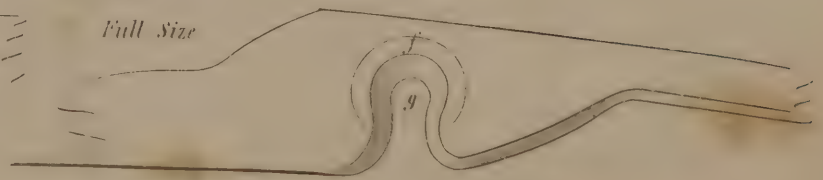


Fig. 1.

Fig. 2.

Full Size



EXPLANATION OF PLATE XII.

EXPLANATION OF THE FORCEPS OF PROFESSOR SIEBOLD.

I have been favoured, by the politeness of Dr. Eberle, with a sight of Professor's Siebold's forceps. In their general form and size, they differ but little from the forceps of Baudelocque; they are rather longer in the clams, and a little more curved, as will be seen by examining the plates.

What I value in them is, their very ingenious mode of locking; I am persuaded this has a decided advantage in some positions of the head, and will contribute to the success of application.

FIG. I.

a, The top of the screw, which serves to unite the blades.
b, The head of the shoulder of the screw, which is received a very small way into the countersink f. fig. 2.
c. The conical body of the screw, which is received into the excavation g. fig. 2.
d, The cut part of the screw, which passes into the female screw cut in the body of the blade of the forceps.
e, The head, or but, against which the lower extremity of the screw is received.

FIG. II.

f, The countersink for receiving the shoulder b, fig. 1.
g, The conical excavation for the reception of c. fig. 1.

FIG. III.

The forceps united and reduced to one-half the proper size.
h, h, The manner in which the screw unites the blades.
i, i, The turned extremities of the handles, which serve like those of Baudelocque, as blunt-hooks.

EXPLANATION OF PLATE XIII.

The forceps represented in Plate XIII. are reduced two-thirds from the proper size—they are called the long French forceps, or Baudelocque's forceps, though they differ a little from them, but not materially. These instruments are well made by Mr. John Rorer, No. 26, North Sixth Street, from a Paris pattern.

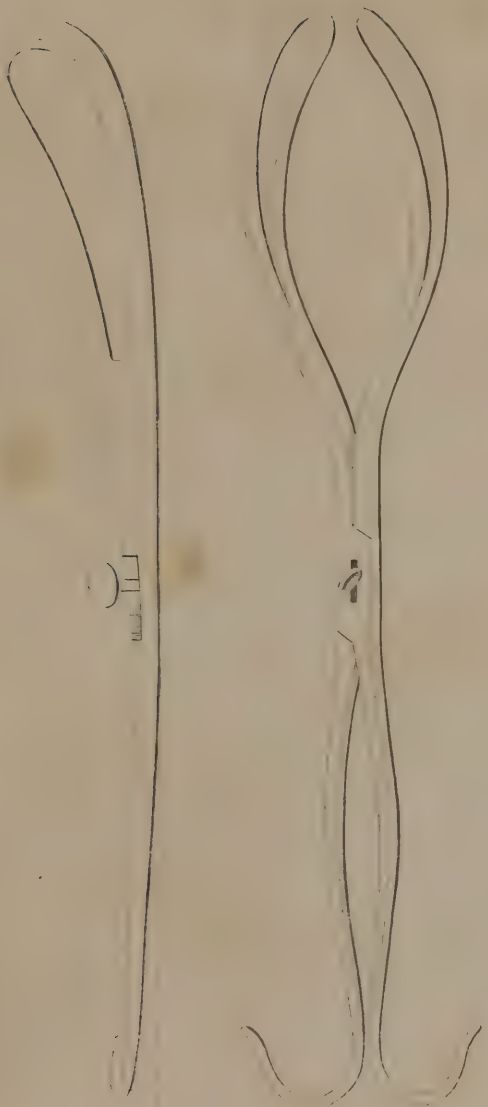


PLATE XIV.

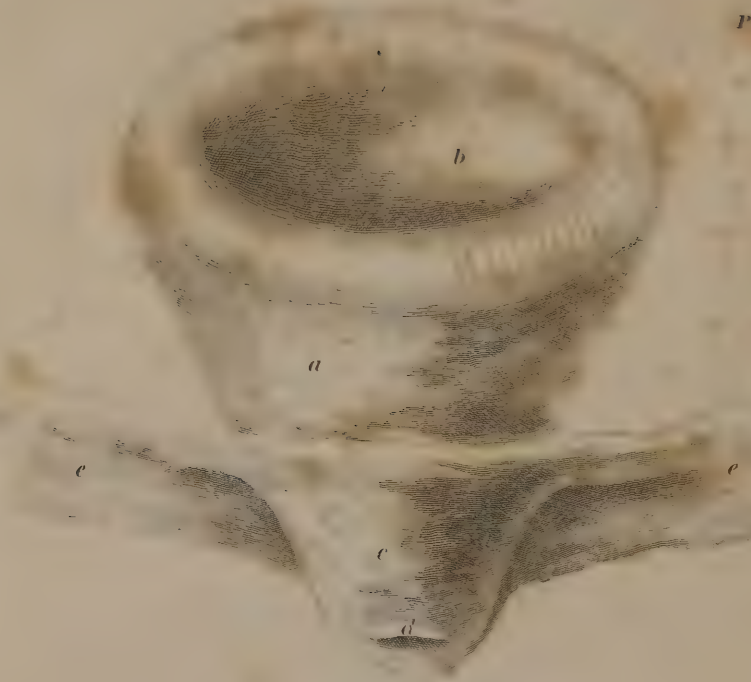
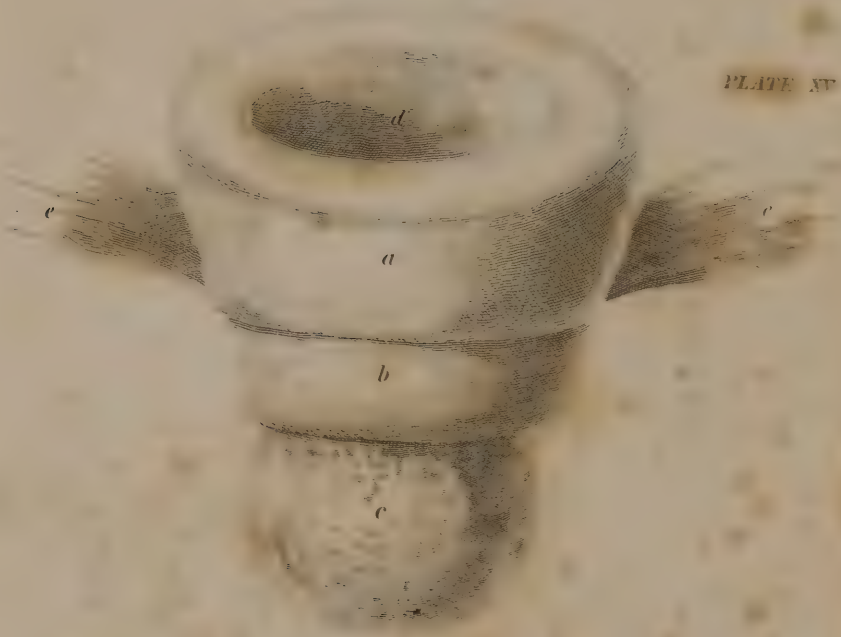


PLATE XV



EXPLANATION OF PLATE XIV.

a, The body of the uterus, reduced to about half its natural size after labour.

b, The hollow formed by the depression of the fundus.

c, The neck of the uterus contracted.

d, The os tincæ.

e, e, The membranous expansions by which the uterus is connected with the pelvis.

EXPLANATION OF PLATE XV.

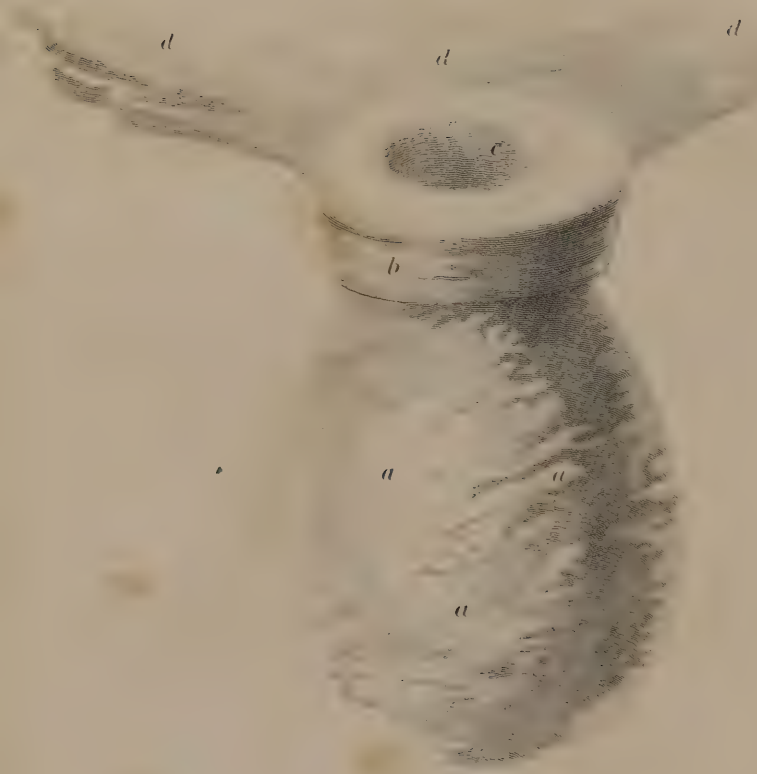
a, The body of the uterus inverted and reduced to about half its natural size after labour.

b, The neck contracting firmly on the protruding fundus.

c, The fundus escaping through the os uteri.

d, The depression formed by the inversion of the fundus.

e, e, The membranous expansions which connect the uterus with the pelvis.


d
d
d
c
b
a
a
a

EXPLANATION OF PLATE XVI.

a, a, a, The fundus and body of the uterus escaping through the os uteri, reduced to about half its natural size after labour.

b, The neck of the uterus firmly embracing the inferior portion of the body.

c, The vacancy left at the upper portion of the neck of the uterus.

d, d, d, The connecting membranous expansions of the uterus.

EXPLANATION OF PLATE XVII.

a, a, The body and fundus of the uterus.*

b, The neck of the uterus inverted with the body and fundus.

c, The os uteri looking into the abdomen.

d, d, The connecting membranous expansions of the uterus.

* In making the above drawings, our only aim was to make the mechanism of inversion clearly understood. We have, therefore, divested the uterus of all its appurtenances, except that by which it is connected with the vagina, that the figures need not be confused. For the same reason we have represented the uterus delivered of the placenta.


d
d
b
a
a


d
a
Fig. I.
a
d
d
c
c
a
a
Fig. III.
Fig. II.
a
a
c
c
b
b

EXPLANATION OF PLATE XVIII.

FIG. I.

a, a, a, The umbilical cord prolapsed before the presenting part of the child.

FIG. II.

a, a, An elastic gum catheter of the size called No. 8, reduced to one-half its breadth and length.

b, The stilet.

c, The eye of the catheter.

d, A loop of riband or tape passed over the cord, both extremities of which are made to pass through the eye, c, and descend a little below the external extremity of the catheter. It will be seen by this arrangement, that the upper extremity of the catheter can be put in contact with the cord, by drawing the ends of the riband without, and gently pressing the instrument upward; and when there, it may be kept in that situation, by forcing the point of the stilet upwards; or the loop can be loosened by withdrawing the stilet, or ceasing to draw upon the external ends of the riband.

e, e, The extremities of the riband.

FIG. III.

a, a, The body of the catheter.

b, The stilet.

c, The eye of the catheter, through which the riband passes.

d, A knot tied on the cord.

e, e, The external extremities of the riband.

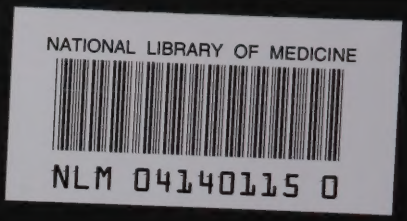
It will readily be perceived that if the ends of the riband in fig. II. be drawn, the cord and the extremity of the catheter will be brought in contact, and if it be desirable to fix it in this position, it can be done instantly by forcing the stilet home; and if

it be necessary to take off the pressure from the cord, it can be readily effected by again withdrawing the stilet a short distance. Whereas the ligature in fig. III. is permanent, and will consequently maintain a uniform pressure upon the cord, and may even arrest the circulation within it. If it be necessary to withdraw the catheter after the loop is returned, it can be done in either case with equal facility by drawing the stilet so as to disengage its point from the riband, where it passes through the eye of the catheter, and then removing the catheter itself. There will be, however, this difference in the situations of the ligatures; that of fig. II. will be without compression on the cord; while that of fig. III. will constantly remain the same.

DIRECTIONS FOR PLACING THE PLATES.

The plates are to be placed at the end of the book, making them face their explanations.

THE END.


NATIONAL LIBRARY OF MEDICINE
NLM 04140115 0